

MAY, 1877.

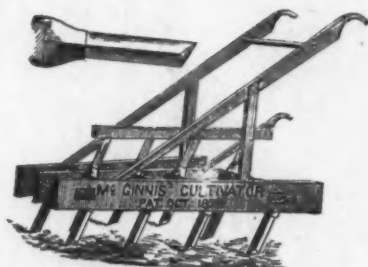


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October 11, 1875.

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THE AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." Virg.

PUBLISHED BY SAML. SANDS & SON, BALTIMORE, MD.

VOL. VI.—No. 5.]

MAY, 1877.

[NEW SERIES.

An Agricultural Bureau and Experimental Farm Necessary to Advance the Interests of Maryland.

Messrs. Editors American Farmer:

The best means to advance the agricultural interests of Maryland is a question of infinite importance to the people.

Agriculture is the basis of prosperity to the State. A State is poor indeed which depends upon another to supply food for her people—poor, because not independent. A system which taxes agriculture to support manufactures and commerce, will end in ruin. Such a system will build great cities which will eat up the country. The people of cities are "*Fruges consumery nati*," having consumed the country, they will fall themselves to careless ruin. If suitable measures be not adopted, the city of Baltimore, which is increasing so rapidly in commerce, wealth and population, will eat up the State of Maryland; but for the granaries of the other States the citizens of Baltimore would starve; her manufactures and commerce buy food—but not from Maryland. The city is becoming richer; the country poorer. The facilities to market hasten the end—ruin to the farmers of the State. The census shows for decade from 1860 to 1870, an increase of population of about 34,000. Subtract the increase to the cities and towns by immigration and natural increase, and I believe you would find a decrease in the rural population. Emigration of farmers from the State has commenced and will increase if something be not done to promote the agricultural interest. The columns of the newspapers are filled with "*farms for sale*." Real estate brokers are flourishing. Agriculture is prostrate.

The object of a system of agriculture is to restore fertility to exhausted lands, and to preserve those which are fertile. Increase in population will be thus afforded to the State, and a handsome profit to the farmer; the State will become richer and more powerful; the people more prosperous, happy, and virtuous. When farming becomes profitable more of our citizens will engage in its pursuit. Intelligence will increase, better government will be instituted, and the period again arrive when the post of honor will be the reward of merit. Honorable distinctions will not be distributed to idle and

powerful men, but rather to more useful citizens.

Prosperous agriculture will draw in her train commerce and manufactures. Even the so-called learned professions will feel her beneficial influence and a higher standard of excellence be required by the community whose intelligence will enable them to distinguish between the charlatan and the meritorious. We do not so much require an addition to our population by immigration, as inducements to our citizens to engage in agricultural pursuits; prosperity will soon fill our country with a teeming population from the natural sources of supply; for increase of population bears a direct and positive relation to the facility with which a livelihood can be gained; nor will our children be compelled to emigrate and carry their industry, energy and talents to add to the wealth and prosperity of more generous and prosperous States.

When steam was first applied to the purpose of travel, trade and traffic, it was predicted that the ruin of the agriculture of the East would be a consequence. The alleged reason was, that the fertile lands of the West would be brought into competition with the impoverished lands of the East. The prediction has been verified. It cannot be denied that with lands of equal fertility the products of the West could not compete with us in our own markets. Our distance from market is much less; our means of transportation much cheaper. This is especially true of a large portion of Maryland and Virginia, and results from their extensive water-fronts on the Chesapeake bay, and the deep rivers which penetrate so far into the interior of the country, which is increased by the Chesapeake and Ohio Canal of Maryland, and the James River and Kanawha Canal of Virginia. These canals are yet incomplete, nor do I consider it to the agricultural interest of those States to complete them to the Ohio river, because they would afford cheap transportation for the products of the West. I would here remark that the interests of Maryland and Virginia are of the most intimate character. To say nothing of the kind and cordial relations which have ever existed between the people of the two States, I will call attention to the fact that much the larger part of Virginia seek Baltimore as a market for their products, which in turn is a distributing point for that State. Whilst every step taken to advance the agricul-

ture of Virginia redounds to her welfare, it likewise adds to the trade of Baltimore. For this, among other reasons, we hail with pleasure the passage of an act by her Legislature to create an Agricultural Bureau, which has for its object the protection of the farmer and the advancement of his interest. Does not the agricultural interest of Maryland need the fostering care of her statesmen?

It was suggested by an intelligent gentleman, formerly State Senator, and familiar with the agricultural resources of Maryland, that inasmuch as we cannot compete with the West as matters now stand in the production of wheat and corn, that we should make a "specialty" of tobacco culture, in which article the West cannot compete with us. It is a principle in agriculture to make the product for which the soil, climate, and convenience to market render it peculiarly adapted, the leading crop; and if we had a monopoly of soil and climate producing tobacco, we might find it to our interest to make its culture a specialty; but even under such circumstances it would be doubtful policy. But when tobacco can be raised from the valley of Connecticut to the Rio Grande, and from the Atlantic to the Pacific oceans, such a policy would be ruinous to Maryland. There is within the United States a cotton belt which gave a monopoly to that section; cotton was accordingly cultivated to the exclusion of other crops, and it was arrogantly crowned "King." The planter purchased everything from an axe-helve up to a negro. The North and West supplied him with machinery, farming implements, mules, flour, corn, meat, and whiskey—in a word, with everything except the negro,—a supply of which New England had a short time before furnished Maryland, Virginia, North and South Carolina, and Georgia. Cotton was relied on to pay for everything. The result is too well known to dwell upon. The system is undergoing a radical change, and the planter finds it to his interest to cultivate less cotton, and, at the same time, to supply from his plantation all the wants which a well-regulated establishment is capable of affording. Such, in my opinion, is the interest of the Maryland farmer. In certain districts tobacco should be, and I suppose is, the leading crop; but others are better adapted to wheat, grass, and cattle. A division of labor is suitable to manufactures, but not to agriculture,—in the former there is the element of certainty of results. Given the materials, we can make leather, thread, wax, &c., out of which we can certainly make a shoe. In the latter, results depend upon many contingencies which need not be mentioned. All the productions of the earth link in with each other, and a State should cultivate every product to which the soil and climate is adapted.

It would be a mistake to stop the distilleries. One effect would be to increase the price of pork and bacon, and of course all other meats,—for thousands of hogs are for the most part fed upon the waste wash which goes to fatten them, and require but a small quantity of corn to give firmness to the flesh. *The spirit is nearly a clear gain!* The spirit in itself produces an immense amount of trade,—foreign and domestic. A large quantity of damaged grain, unfit for other uses, is consumed in its manufacture. The consumption

of spirit produces without complaint an immense revenue,—encourages the production of corn, wheat, barley and rye. As to what is said in a physical and moral view against consumption of spirit, experience has taught mankind to pay but little attention to the declamation on that subject, and to regard it as rather well meant than well considered. It is a medicine for the mind! Under the pressure of the cares and sorrows of our natural condition, men have at all times, and in all countries, called in some physical aid to their moral consolations,—wine, beer, opium, brandy, whiskey or tobacco.*

A diversity of products is clearly to the interest of every farmer in the State of Maryland. A little less tobacco, a little more corn and wheat or rye, a few more cattle, sheep and hogs, to say nothing of a well-ordered poultry-yard. Everybody will be better fed, laborers better satisfied, horses and oxen kept in better order, will do more work—contentment and profit will go hand in hand. It is plainly to the farmer's interest to feed his laborers plentifully, that his teams should be fat and sleek, and his farming implements of the best kind. In order to this state of things the farmer must make a profit, otherwise it is impossible that he can continue to supply that abundant food, clothing and lodging for those whom he employs. The farmer must have a full incoming profit! This is to the interest of all concerned, (laborer, horses, mules, cows, &c., &c., &c.) to say nothing of the merchant of whom he buys his groceries, clothes, farming implements, and fertilizers.

But how can this be effected, when it is admitted that as matters now stand we cannot compete with the West in wheat, corn, and the like.

The labor question meets us at the threshold of the enquiry. I have not time to discuss it within the brief limits of this article; suffice it to say, that labor is a commodity, and as such an article of trade, and subject to all the laws and principles of trade.

The basis of agricultural prosperity is *free trade*—the farmer must have the privilege to sell where he can get the highest price and buy in the cheapest market; agriculture must not be taxed to support other branches of industry.

The agricultural interest of the State of Maryland requires the establishment of an Agricultural Bureau to foster and protect this interest. What is everybody's business is nobody's business, and therefore we must have a responsible organized bureau whose business it shall be to enquire into the oppressions under which this interest suffers, and to suggest the necessary means of relief. Every question which affects the agricultural interest of the State should be

*[We are not prepared to contest or controvert the views here taken on this point, but, while we give the widest scope to our correspondents, we must be permitted to put in here a special disclaimer for ourselves. That man in every condition of nature or civilization resorts to stimulants or narcotics is admitted, and it is not improbable that as with the past so "the coming man will smoke, and drink wine." Yet so far as even material results only are involved, we are not satisfied but that the advantages would be greatly in favor of the destruction of all distilleries. If, however, the position of our able and eloquent correspondent is unassailable, then we can only say:

"If true 'tis pity, and pity 'tis 'tis true."

—Eds. A. F.]

carefully weighed and considered,—taxations, labor-system, fertilizers, collection of statistics,—so that farming shall be raised to the rank of an art founded upon well-ascertained principles, instead of, as at present, a hap-and-go-lucky, empirical occupation.

To attain such results, an Experimental Farm or Station is a necessary adjunct to the Bureau.

But agriculture at the present time is sufficiently enriched by facts to propound general principles or theory. I beg your readers will not be alarmed by the word *theory*. Words are things. The triumph of a theory is to embrace the greatest number and the greatest variety of facts. A theory is good when it succeeds in grouping facts together in logical order; it is fertile when it gives rise to discoveries, and bears within itself the germ of important advances. A scientific system embraces every order of important facts. A scientific system is then necessary in agriculture to the perfection of the art. We have not attained to this perfection of a scientific system, but we have theories which are good because they group facts together in local order, and theories which are fertile because they have given use to important discoveries, and bear within themselves the germs of important advances. We may look forward to the time when we will have a scientific system which shall embrace every order of important facts in agriculture, when it will take rank among the arts founded on science, which is knowledge. An *Agricultural Bureau and Experimental Farm* are necessary to attain such results. In a series of years, farming based upon science will succeed when empirical farming will fail. To put in practice the principles of farming, faith is necessary, which can only be acquired by observation and experience. After being convinced of the profit of chemical manuring, the farmer must have faith in the purity of the chemicals before he will spend his money in their purchase. It becomes, therefore, the interest and duty of the State to afford every information and instruction, as well as security, against fraud. He must be taught how to work, what fertilizers to apply, and how to apply them. These purposes can only be accomplished by an Experimental farm.

The prostrate condition of every branch of industry is filling the country with apprehension. We must not only know that the body is diseased, but likewise the cause and nature of the affection, if we would institute a rational mode of treatment for its cure, or relief. In the case before us the condition is a ruined agriculture,—the cause, misrule, extravagance, and corruption on the part of those who have possessed the government since 1860.

The people have been robbed wholesale and retail, collectively and individually. Many of the Southern States are applying the proper remedy in one direction, which consists in the effort to reinstate agricultural prosperity,—to examine into the causes and nature of the burdens which afflict, and at the same time to apply such remedies as may be dictated by judgment and good sense. Georgia has taken the lead,—she has established an Agricultural Bureau. Although inexperienced, the benefits resulting have induced other States to follow her example; North Carolina and Virginia at the last meet-

ing of their General Assemblies, passed acts for the same purpose. Alabama and Mississippi are agitating the subject.

The object of this communication is to call the attention of farmers of Maryland and of the members of the Legislature to this question, so that it may be discussed and considered, in order that they may be prepared to act when the General Assembly shall meet next winter.

The Commissioner of Agriculture of the State of Georgia has made a voluminous report for 1876, which shows the magnitude and diversity of the agricultural interests of that State.

Much care has been taken to secure to the farmers, fertilizers upon which they can rely. More than \$500,000 has in this article alone been saved, which has been added to by increase of production. Litigation about fertilizers has ceased.

The result of *soil-tests of fertilizers* is also given. This consists in furnishing certain fertilizers, with instructions in regard to their mode of application. As might be expected, the results are unsatisfactory, crude and unreliable as a guide to others—only the general fact is deduced of the increased production caused by the application of the manure. What is needed by the Bureau, is a special department to take charge of "*soil-tests of fertilizers*," which shall institute a series of experiments conducted with rigid exactness. This can only be done by Experimental stations or farms.

What has been done by Georgia with such advantage to her interest, is surely worthy of consideration by Maryland. I trust, Mr. Editor, that some of your contributors will think this subject worthy of consideration, and give us the benefit of their views.

Should you deem my article worthy to be laid before your readers, I will again beg the privilege of appearing in your valuable journal as an advocate of the establishment of an Agricultural Bureau and Experimental Farm in the Commonwealth of Maryland. MARTIN P. SCOTT.

385 N. Charles St., Baltimore, April 6th.

[We shall be much gratified to lay before our readers the further views of our correspondent.

We leave for another place some considerations of our own, and some facts worth noting in addition to those so admirably presented by him.—*Eds. A. F.*]

MAKING AND PRESERVING HOME MANURES.

Editors of American Farmer:

I believe all farmers are well convinced that good and remunerative crops cannot be made but from rich land, and but few of our many acres are in that condition; hence the manurial question is the great one, for upon the full production of the land of the various crops needed for man's use and comfort depends our success and power as a nation. These truths admitted, what is it wise for us to do? Save every pound of manure that is within our reach, and which will repay us with interest. The important inquiry of all good and patriotic men should be, how can we save and accumulate enough manure to make our many acres of poor land again productive? Now, as "Many littles make

the heap," let every one save carefully the litter about his home that is now wasted, and worse, for many a home is thereby made unhealthy, and the heap will be large indeed.

By the last census, as per "Report of Agricultural Department" for 1875, Maryland has 4,512,579 acres of farm-land, independent of the forests of woodland attached thereto of 1,435,988 acres. Now, if we divide the first named or cleared land into 200-acre farms, we have 22,562 farms, the fraction of 189 acres over. No one, I think, will doubt that with a little care and thought at least \$100 in value can be added to the present annual home supply of manure. The large farmers with wealth, and who keep much stock, can double the value of their barn-yard manure by keeping it under cover. Of this the writer has no doubt, for in my immediate neighborhood I am surrounded with what are considered good farmers, and I know they are industrious, good citizens, and will compare well with the farmers and citizens of any other portion of our State for intelligence, virtue and all good qualities that make good men. They all have barns and open barn-yards, save one, and he, yet a young man, has had the wisdom to so arrange his barn and feeding departments that all the manure is kept under cover, safe from the leaching rains and evaporating sunshine and winds, and all of his neighbors know his crops are best, and that his manure is worth double, load for load, with that of the rest of us. Now, let all do the best they can to keep their barn yard manure under cover. Where they cannot yet afford sheds, let it as it accumulates in the yard be thrown up in long flat piles, with every week or two a load of woods earth, ditch bank, or other waste dirt, thrown on. By an occasional sprinkle of plaster its value will be much increased.

Have a regular place for your hogs to be fed, and a good, dry, warm shed for them to sleep under, keeping them well bedded and the pen well littered, and the amount and value of the manure will be a pleasant surprise to all who have not heretofore made such provision for the care of their hogs.

All farmers raise more or less poultry, but how few make any arrangement to control them so as to save their droppings. A little care and management will add twenty dollars to the manure pile from them per year.

Sanitary Advantages.

Now as to our houses, the homes in which we and all we hold dear live, how many of us use the right means to keep every place clean and to save all the waste that must accumulate about a home? First: a well-arranged privy that can be cleaned of its contents at least once a fortnight, so as to avoid all fermentation and offense, and have the full manurial value therefrom. Next: the best arrangements for saving and distributing the kitchen and chamber waste, the value of which when properly saved and applied to the land will surprise all that will do so. There are several plans adopted by different persons. One I noticed in the *Farmer* in one of last year's numbers, used by some farmer in Baltimore county: a brick sink, filled with some absorbent, into which all suds and drainings from the kitchen ran. This arrangement would

save the manure, but I think it has two objections, one serious, for the exhalations from it would endanger the health, and it would be too much labor to empty it. I think a much cheaper and better plan would be to have a truck or cart made to be drawn by a horse or yoke of oxen. This, filled with earth from the fence corners or the woods, and set in the most convenient place to the kitchen, so that all dish water, soap suds, buckets from the chambers in the morning and all slops can be thrown, and every fortnight hauled and thrown on the grass or growing grain, or the barn-yard heap, as time or convenience will allow.

A truck for this purpose can be cheaply made by any one. Cut off two sections of a tree fifteen or eighteen inches in diameter; put holes through the centres to suit an axle of sufficient strength, say three and a half inches, and make a tongue or shafts, with a plank box of sufficient size for a good horse-load, and the whole thing is done; no iron needed except a few nails to make the box. This plan I think the best, the most cleanly, and will meet the wants of all. Another, but not so good, is to haul two or three loads of woods earth, and make a flat pile of it on which the slops can be thrown, and hauled out once a month at least, so as to avoid any impure exhalations from the same.

I wish our farmers generally thought more upon the sanitary conditions of and about their homes. Many a dear one has been lost by typhoid, scarlet fever and diphtheria, caused by some local festering matter near their homes, as a deep, foul privy, stagnant pool, or cellar foul from decaying vegetables left there too long in the spring. Any intelligent, thoughtful physician, will confirm what is here stated.

Results to be Obtained.

The worth of space in your valuable paper admonishes me I must try to be brief, and, as the lawyers say, sum up and see what is proved, and how much our case is worth. First: we have, if I am right in my estimate in the division of our farming lands, 22,562 farms, and should each farmer add but \$100 to his present home manure supply, we would thereby add to our means by making an investment in our lands of manure of no doubtful kind, of \$2,256,200 in value, which will pay a better dividend than any stock we could buy; the security none can question, for it is the land, our mother, the supporter of us all, directly or indirectly, without regard to class or profession,—for all must admit that it is the yield of the earth that gives vitality to all useful and legitimate pursuits, and will continue to do so to so great increase of population as we can conceive, if we will but be careful of all manures within our reach and apply them abundantly so as to make our lands rich. Then with industry and a fair share of intelligence to enable us to grow and cultivate properly such crops as are best suited to our soil and climate, we can add to our strength and comfort more than a hundred fold. I have mentioned the little that might be saved and the amount thereof, but it is but a drop of what we want and must have. Where shall we look for this supply? We must have such laws as will compel the cities and towns to save and prepare the waste therefrom, so that all can come back

to the land to compensate for crops grown and sent to them for their comfort and consumption. From a careful estimate, founded on information from various sources, and particularly from the earnest and intelligent Assistant Health Commissioner of Baltimore, that with proper means used for the saving of the entire waste, Baltimore city would give us 200,000 tons, the towns throughout the State 50,000 more, making 250,000 tons. This to the farmer would be a great boon at ten dollars per ton; this saved and manipulated properly we have \$2,500,000 additional added to our manurial or producing supply. We have lime in abundance throughout our State; plaster is plenty, and pays well for the outlay. I have said nothing of the commercial fertilizers; their aid will be great when the farmers have money to buy them at fair prices; the outlay is too great for most farmers to use them even in their limited supply. Let us save all at home, and see to it that the cities and towns shall save for us all their waste at a fair and remunerative price for so doing, and we will soon be able to buy all the good commercial manures that can be made. Is not this subject of manures so great as to cause all thinking men to examine closely and see what can be done? We cannot stand still as we are, nor can we go forward unless we have manures in sufficient supply, and at prices that all can purchase. If we cannot do this we must go as all nations have gone—to ruin—who took from the land all crops without compensating for the same. May we timely exert ourselves to save us from ruin.

Yours, H. E. D.

Hilbury, Harford Co., Md.

[We believe no farmer in Maryland has given greater or more intelligent attention to this subject than our correspondent, and his suggestions are timely and pertinent. That the enormous wastes of our cities ought to be recovered for the benefit of agriculture all agree; and he who can point out a practical mode of even partially accomplishing an end so much to be desired, will well deserve the civic wreath of a public benefactor. The need is one every day becoming more and more pressing.—Eds. A. F.]

Notes from Brighton (Md.) Grange.

Editors American Farmer:

CORN being the subject for discussion, the worthy Secretary, Sister Ella M. Lansdale, opened the work by stating that a private letter had suggested, as an item of experience, the severe cutting of the roots of corn close to, if not under, the plant; the plan, and also the liberal use of plaster, being followed by decided advantage.

W. A. S. Lansdale was in favor of deep plowing, thorough cultivation and close ($3\frac{1}{2}$ by $3\frac{1}{2}$ feet) planting; has tried step planting with a yield of 79 barrels on 7 acres; thinks with a good stand would have got 12 or 13 barrels; tried 4 by 4 feet apart on poor ground, and remainder of field $3\frac{1}{2}$ by $3\frac{1}{2}$ with inferior result in former case, although that portion was better manured.

W. Chaplain Gartrell—Pulverize and enrich the ground, and, among the various plans tried, thinks $3\frac{1}{2}$ by $3\frac{1}{2}$ feet the best distance apart for the rows. Three things are necessary in corn cultivation: air, sun, dew; if planted too thickly air cannot circulate properly, nor the sun warm the soil, and when these are not working efficiently in the crop it will be small and of poor quality. Where the plant has room enough it will put forth two shoots and make two ears to the stalk. From his experiments he can do better $3\frac{1}{2}$ by $3\frac{1}{2}$ than at any other distance apart; sometimes harrows his corn and stops working when the brace roots appear; cuts off all suckers, as they ear only on the tassel.

W. Treasurer Schofield—Some stalks will sucker, some will not; would plow a stiff clay in the fall and manure the sod with barn-yard manure; sows 500 pounds bone and 30 bushels shell-lime per acre; thinks $3\frac{1}{2}$ by $3\frac{1}{2}$ best distance; sometimes does not thin out, leaving 3 and 4 stalks in the hill; cultivated till a foot high, then shoveled to cover up weeds; works it all he can, regardless of number of times; corn is not hurt by cutting some of the roots; skips one row in plowing; has worked good land in Valley of Virginia and in Loudoun county, Virginia, but has raised his best crop in Montgomery county, Maryland; gets more corn from 3 and 4 stalks to a hill than from 2, and thinks 3 or 4 better than 2 on good land; on some of his land, when he took it, one was too much; has plowed lightly with dull shovels after harvest to kill grass, and got a good crop; would rather cut a few roots than have a crop overgrown with grass and weeds; if you turn under straw, and a dry season ensues, you may lose the crop by the drying up of the roots in this layer of straw, but the roots will take hold and grow in a wet season; favors deep-plowing without sub-soiling; would get the soil good first and deepen to a foot gradually; soaks his corn in copperas water, (1 pound to $\frac{1}{2}$ barrel water) which may remain in the water several days without injury, in case bad weather prevents planting after soaking a day or so; has had no trouble with worms or birds when so soaked; has had trouble with crows when not so prepared; cuts, when the leaf fades, 64 hills to the shock; left in a narrow five-foot corn-house to secure free circulation of air; cuts up his fodder with a horse-power cutter, which also grinds the fodder, and thinks by that process he saves two-thirds of what we usually lose; 4 horses and 4 hands cut enough in one day to last till pasture; gives $\frac{1}{2}$ bushel of this at a mess, with 3 pints of feed for dry cows and 9 pints to milch cows twice a day; mixes corn meal and mill feed, equal parts, for feed.

Bro. J. T. Anderson stated that some burn their straw and waste vegetable matter, weeds, brambles, &c., but he plows under, and asked if that was the proper plan.

Wor. G. K. Brown has good crops from both thick and thin planting; usually plants one way in drills, 4 feet apart and a step between the seed; never plows in the fall; would go to the falls a fishing or to the Centennial to avoid it; is not troubled with worms.

Wor. Chaplain Gartrell plowed some corn land in February and March and stopped to get in his oats; then plowed remnant of field; the

late-plowed land was swept by the cut-worm; planted June 5, and then was not troubled by worms.

D. L.

[It would give us pleasure to have other granges follow the example of Brighton, No. 60, and when any subject is discussed of general interest to the farmers of our State, to be furnished with a report, even if a brief one, of what is said and done. "To do good and communicate" is a precept as binding on the Patrons as any other of their order; and no grange is so isolated but that such notes as those furnished by our accomplished correspondent in this instance would be read with interest and profit. Our pages are always gladly open to such interchange of information between the granges of Maryland.—Eds. A. F.]

Characters of Men and the Real "Inwards" of Farming.

Opinions of men are different. Some hold on to an idea and change not; they are pretty much in the category of a man of one idea. They make no allowance for change taking place in trade, circumstances or the seasons. On the other hand there are very fickle persons changing their minds daily, very often several times a month, and so on as time passes away. Such are hard to keep pace with; their tempers might be as changeable as their opinions. When you know them you can make the proper allowances. There might be a medium between the two parties—a middle course. It is advisable to be cautious in forming opinions; look up one side and down the other before you come to a conclusion; weigh matters in the scales and grapple with the weightiest and preponderating idea. If you wish to operate to advantage and make anything pay, set your mind to work. Elaborate the various processes step by step, view it critically until you get thorough with it, then you can proceed knowingly. Practising on that plan, you become expert in process of time and profit by success.

If the foregoing is true in many things, it may be so in agriculture. Form good plans, have good implements, good horses, mules or oxen. Obtain the best seed, sow or plant your lands in such crop as are suitable to the character of the soil. Use the best manures and fertilizers, and in the manner that will produce the best returns. If mixed farming is better, get the best stock of animals, such as cattle, sheep or hogs—the best are the cheapest. None can be profitable if not well cared for with pasture, good shelter and nutritious food.

Those would doubtless succeed best who see for themselves—look around among their neighbors or those who have celebrity in that line. All should be willing to learn, and never think they know everything until they become perfect by experience and observation.

After having tried a thing sufficiently, and you find it does not pay, then give it the go-by; better change from conviction than compulsion. In time all things become old; any article in agriculture or commerce is superseded

in course of time. When other things turn up and carry the day, try and be abreast with the best modes, and take hold of the most needful and desirable productions. In changes thus brought about, wisdom and forethought are valuable. Bad men, bad money and bad investments, must be thrown overboard to make room for a happy future.

All creatures, both of sea and land,
In sense of common want agree;

All wait on Thy dispensing hand,
And have their daily alms from Thee.

RUSTIC.

A Few Hints on Corn.

Editors American Farmer:

Where danger is apprehended from the cut worm it is a question whether it would not be better to defer planting until late warm weather, say last of May, and by spending the time in the thorough cultivation of the land the crop would soon make good the lost time. Corn can be most cheaply and most effectively worked before it is planted; harvest usually interferes with the proper working of late-planted corn, and in case of failure to stand, the deficiency cannot be made good; otherwise, late corn has many advantages. This crop requires especial attention in the early period of its growth. The early and constant working of corn is one of the most important features of corn-raising; if this is neglected, no amount of subsequent cultivation can supply the deficiency. For a general rule 4 by 4 feet is a good distance between the rows, leaving two stalks to a hill; give a light top-dressing of plaster when the plants are a foot high, and a very light hill application at planting, even on good land, to give the young plants a start, is advisable. It is not a good plan to tear up the roots in a dry time in dry soil, nor is it a good plan to allow weeds to grow and injure the crop, and between these evils the farmer must choose the least, but where corn is worked early and well he will not be compelled to choose. All things considered, it is better to plow under all straw and vegetable matter to retain moisture in the soil, lighten it and enrich it, than to burn it. The great need of our soil is organic matter; this is the foundation of successful husbandry, and should be eagerly secured in straw-rick, barn-yard manure, brambles, forest leaves, and, better than all, a good stiff sod that tears up under the plow-beam like new calico at a quilting party. As corn and the fodder are likely to mold on the shock when this is too large, it is a good plan to make it small, eight or nine hills square, to secure ventilation. When husked, tie up the fodder with tarred rope, haul and stack near barn like wheat, and then get a good cutter and cut it up, and don't be guilty of the inexcusable folly of feeding it out whole, unless you are too busy writing for the papers and telling others how to do it, to practice the doctrine you so earnestly proclaim.

Houard Co., Md.

D. LAWRENCE.

THE MEAT EXPORTATION TO ENGLAND.—A statement of the shipments of fresh beef from this country to Great Britain for 18 months past show that in October, 1875, there were 36,000 lbs.; in March of this year 9,707,855 lbs.

Correspondence from Georgia.

Our Future Prospects.

Messrs. Editors American Farmer :

We read in your admirable journal, so well adapted to the Southern farmer, because it is published in the interest of the Southern States, many very instructive and valuable tests and experiments being made, in Maryland, Virginia and the Carolinas, showing the spirit of progress infused throughout the agricultural communities of those States, which must develop a high state of prosperity, if their people continue to practice the great cardinal principles of self government, economy, industry and independence at home.

We, in Georgia, have been called the Southern Yankees, not because our people are more enterprising than your own; but on account of our diversified industry, and I apprehend, soil, climate, mineral and agricultural resources, which give employment to her people, who, under the patronage of a generous policy adopted by the State of Georgia, are enabled to work in the coal mines, copper, iron, gold, cotton and woolen mills; plow, wagon and carriage factories; in fact, in almost every industry essential to true progress and independence—with that push, energy and go-ahead-iveness, so characteristic of the Eastern Yankee. In these general aspects, we may bear an analogy to the Eastern Yankee; but in none other. Our soil, climate and productions, by nature, are unsurpassed, with every variety of temperature, from the semi-tropical temperate to almost the cold regions at the base of the Alleghanies.

For instance, almost every fruit known to the horticulturist is grown in Georgia, including oranges, bananas, pomegranates, peaches, figs, apples, pears, apricots, cherries, plums, all varieties of grapes, vines, &c., and our great crop of cotton, with planters producing from fifty to two thousand bales per year, are known, and its influence upon the general prosperity of the world is acknowledged.

Our coal and iron interests are inexhaustible, and can supply the world for hundreds of years. These are being worked by millions of Georgia and Northern capital. Our cotton factories are a great success,—numbering as many or probably more than all the Southern States combined, and have paid, since the war, from ten to fifty per cent. on the capital invested in a single year.

They annually manufacture thousands of bales, produced around the mills, and employ as many thousands of Georgia's poor people at the looms and spindles.

In Columbus, Atlanta and Augusta, immense new buildings are being erected, built by Georgia capital, and aggregating millions of money, which will run from fifty to one hundred thousand more spindles on cotton and wool within six months.

The State is virtually out of debt. We own more property than we owe bonds or money.

We have schools and colleges, supported by State aid and general funds for the education of the white and colored races, in separate institutions. We have regular organized bureaus of agriculture, geology and mineralogy education. We have a Medical Bureau and an Experimental

farm, like they have in Germany and France, to test seeds, plants, and the adaptation of manures to different soils and productions. We have a chemist to analyze these commercial manures and see that no imposition is practiced upon Georgia farmers.

In our next, we propose, after giving you this cursory view of our situation, to treat more specially the faults, imperfection of systems, labor, &c., we labor under; and returning our gratitude for the patience of your readers, we are,
Truly,
A GEORGIA FARMER.

Talbotton, Ga., April, 1877.

[We are obliged to our correspondent for his letter, and hope to hear from him frequently. Georgia certainly sets an example to her sister States in the energy and business-like skill with which she manages her public affairs. In our last we took occasion to call attention to the efficient and faithful administration of the Agricultural Department of the State, and to point to the great advantages secured her farmers by its operations.—*Eds. A. F.*]

Our French Letter.

The Destruction of Insects.

Messrs. Editors American Farmer :

It is not correct to regard frost as a powerful destroyer of insects, &c. These vermin have been created to resist cold; at the fall of the leaf their distinctive prudence commences to work; they burrow deeply into the soil, the vine worm for example. Some caterpillars roll themselves up in leaves, and secrete a glutinous over-all, that protects them against excessive cold, while solidly attaching them to trees. The eggs of insects have the property also of becoming small pieces of ice without losing their vitality. Winter cold, then, is no more dangerous for insects, &c., in temperate climates, than it is for plants. But what effectually destroys vermin is submersion; a garden flooded in winter for some days will be free from the pests in the ensuing summer; larvæ and eggs are alike destroyed by flooding; hence, why the Fourchon process of submerging vines has proved to be the sole effectual remedy up to the present against the phylloxera. Hence, also, the importance of a long thaw. An inclement spring is more detrimental to insects than a severe winter; eggs deposited in autumn produce insects in March and April. A series of cold humid days will effectually kill them. Such was the case last spring; later, when the larvæ commence to change their membrane, a biting May frost will annihilate them. The great evil of a mild wet winter is the mechanical difficulties it opposes to the working of the soil, which has no longer that friable quality brought about by the disintegrating influences of frost; hence, why farmers justly prefer weather dry and cold.

Agricultural and Horticultural Education.

The Senate is occupied with a bill, having for object the making of agricultural and horticultu-

ral education obligatory in all the primary schools of France. There is no doubt the bill will become law. Another project consists in founding in every department of the country a chair of agriculture. The Agricultural College at Grignon, the chief one in France, has suffered from insufficient area; the occasion having offered, it is proposed to take a lease of additional land, which will increase the college lands to nearly 800 acres, of which one-third will be under cultivation. With such practical advantages united to the important theoretical instruction imparted, Grignon must become the first establishment of its kind on the Continent. In looking over the list of pupils who have taken their diplomas at the recent examinations at this college, many foreigners' names figure therein.

Grignon College undertakes many practical experiments, especially connected with the feeding and rearing of stock. Professor Sanson and one of his pupils tested the comparative nutritive value of bran versus barley meal in the feeding of pigs; the animals selected were Berkshires under three months old; allowing them a fortnight to be accustomed to their special cribs—a point never to be lost sight of when experimenting with live stock—the result was found to be that scientifically and peculiarly bran was not only better, but much cheaper than barley meal.

Cotton-Seed Meal.

Cotton-seed cake is coming into favor for feeding purposes, especially in the north of France, where it is given with beet pulp, thus correcting its constipating tendencies. It facilitates in a remarkable manner, the secretion of the mammary glands; hence, its special value for milk cows. In the south of France the cake reduced to powder is largely employed by market gardeners as a "guano," and curiously enough crushed cotton seed have from time immemorial been a very popular household remedy in France with nurses and mothers, when the babies suffer from short commons at the breasts.

Preserved Fodder.

The evidence is now complete in Italy, Austria, Germany, France and Belgium, of the success attending the feeding and fattening of stock on green maize preserved in trenches. In this country maize, the giant variety, is rapidly becoming the principal food for stock in summer as well as in winter. To obtain a good yield, the soil must be well prepared and the manure well decomposed. In Belgium farmers find it profitable to give a little oil-cake, hay or straw with the preserved maize, as the latter contains 80 per cent. of water.

The International Show of Dairy Products.

At the late international butter and cheese show held at Hambourg, an important innovation was adopted; for a few francs the visitor could purchase the right to taste three classes of butter and cheese, being supplied with the bread at the same time. The important lesson derived from that dairy conference is, that the farmers of Europe henceforth must rely on pasturage and stock instead of grain, and that associations of farmers, as in France and Switzerland, for the manufacture of cheese, &c., on a large scale, is an absolute necessity. So

serious does Germany view the imperative "evolution," that she has schools at Proskan, Poppelsdorf, &c., for instructing pupils in the most approved methods of preparing butter and cheese.

The Fat-Cattle Show.

The annual fat-cattle show, lately held in the Palace of Industry, is organized by the government, and recompenses are in works of art and medals; the object of this general competition is to develop the number of animals destined for the butcher, by favoring races of a marked precocity, and perfecting native varieties for the same end. It is some thirty-three years since this institution was founded, and which is regarded as a kind of measure of the nation's rural progress and prosperity. The prize ox of honor was a red and white Durham, aged 36 months, and weighing nearly 20 cwt.; the three prize sheep were Southdowns, aged 8½ months, and weighing 33 stone; the prize cow was a Durham-Devon, aged 4 years, weighing 17 cwt.; the prize pig was a white Yorkshire, aged 11 months and 8 days. The display of butter was very fine. The collection of dead plucked poultry was magnificent, and proved that the French are as matchless in fattening as in roasting fowl. The hatching and chicken-rearing machines attracted crowds of visitors; nothing more curious than to examine a hydro-incubator, which, in the course of three weeks, will produce 100 chicks that will at once trot into a nursery and enjoy their pap of barley meal and milk.

F. C.

Paris, April 5, 1877.

The True Theory of Farming.—No. 15.

Mild Lime—Farmers' "Analysis."

Messrs. Editors American Farmer:

The opinions of the Club referred to in my last, are held by a majority of farmers.

They lamented not knowing the "analysis" (composition) of "oyster lime;" but they proclaim what no one else knows, that lime is not manure, but a mechanical agent, &c. I would prescribe for your readers, if it is possible for you to have any suffering with the same complaint, a simple, cheap and certain remedy.

I will first premise, that to know the relative effects of lime from the oyster, the rock, the marls, &c., and in its different states of combination with water and carbonic acid, (caustic and mild states) on the soil and crops on which it is proposed to use it, is of more value to the farmer, for his immediate guidance, than the knowledge of all the chemists in the world, as to its composition. To acquire this knowledge will require less time and labor than to commit to memory the names of the component parts of lime in its various states, which, when known, without a vast deal of other knowledge, would be almost useless.

Take a field that you propose liming, and try it at the rate of 50 bushels per acre,—that is, say one ounce per square foot. Experiment on several adjoining plots of 16 square feet. Spread on or mingle in one of these plots one ounce of lime to each foot of soil, of fresh-slaked fine caustic lime from the rock. To another plot in

like manner apply the same weight of lumps or cakes from the same kiln, well chilled with heavy rains, say expose it in small piles, till it runs into suitable mortar cakes, as they do in some parts of Pennsylvania.

To another apply well-slaked lime from the same rock after exposure to air, but not rain, long enough to become mild. Take other plots adjoining, and apply the lime from oyster-shells in like manner, in the same several states of freshness, mildness and fineness.

On the same day plant a crop of anything on all these plots alike. Cultivate all together with the unlimed part of the field.

If there should be no difference between the yield of these plots and the unlimed part, *in that crop*, that soil did not at that time need additional lime from the stone or shell, in any state.

If any or all the limes prove beneficial, ascertain, by weight of the product of the several plots, whether the stone or oyster-shell lime was more beneficial, and whether the fresh is better than the mild, and whether the coarse is better than the fine.

This imparts more certain and valuable knowledge on this subject, than the emanations from all the leeches infesting the stupendous *Sinecure "Department"* at Washington since the invention thereof.

It is also better and cheaper than to meet once a month, with no experience to communicate, to talk nonsense, bewail ignorance of what is unnecessary to be known, or to impart learning to the public by the inspiration of bubbles and phantasmal chases.

But the difference in the composition of oyster and stone limes. Theoretically there can be no difference between *limes* from whatever source. But nature does not furnish pure limes, and the practical difference in limes from different sources consists in the *impurities* found in them. These "impurities" may be beneficial or injurious, valuable or worthless, depending on what they are.

The oyster-shell, except the animal matter, which burns away in the kiln, is nearly pure *carbonate* of lime. On the expulsion of the carbonic acid in the kiln by heat, the residue is almost pure lime.

The stone usually contains many impurities. Some are worthless and others perhaps more valuable on some soils than the lime. Magnesia abounds in them, which is as necessary to fertility as lime. They also contain some gypsum, (plaster,) potash, &c., which add greatly to the value of the mixture. Stone lime, therefore, is preferable to the purer oyster lime.

But is lime a "manure?" This I presume means, is it plant-food?—and has been sufficiently answered. But there are some phenomena connected with the reproduction of plants and animals that will here be briefly noticed.

An all-wise law, inscrutable to human understanding, common to both classes of creatures, pervades the propagation of plants and animals. It devolves great physical and mental labor on man in the perpetuation of the human race.

The bodies of plants and of animals, including human beings, are made of materials composed of the same elementary substances in different forms of combination. Among these materials

are lime and phosphoric acid and others heretofore enumerated.

But if we mix all these together, or combine them in any proportion, we cannot by this means make a plant or an animal. Nor can a plant or animal, with all the machinery of life under way, assimilate them except under certain conditions of preparation, of temperature, &c.

Phosphorus and the elements of lime, administered uncombined, are unfit for plants or animals, and would destroy instead of preserving life. To produce a plant they must be mingled in a soil with the other soil ingredients heretofore named, including nitrogen, which is common to the soil and atmosphere, (but probably only absorbed through the roots,) in a propitious climate; and there must be placed in the soil the embryo plants, the seed, to start with. Under certain conditions of moisture, temperature, &c., aided by the influence of oxygen, the seed or embryo plant is *vitalized*. The vital force thus begun, assumes control, subordinating the chemical forces, which would otherwise decompose the body, and creates a plant from this nucleus and the substances of food in the soil and atmosphere. Thus, out of one single organ of the parent, the seed, is created a perfectly organized individual.

Although the same food is necessary, and the laws of propagation of plants and animals are analogous in many respects, we cannot make an animal by planting any organ or part of the parent's body in the soil. We thresh the seed containing the embryo of a new individual from plants; while, among animals, nature extricates the already vitalized individual from the parent. They both start in the phenomena of life with imperfect, undeveloped organs; and choice food, in the condition most easily assimilated, in contact with the appropriating organs of each, is necessary for rapid development.

Starting with an infant plant and an infant animal, the same elementary substances are required to build up the bodies of each. But there is a diversity in their powers and *processes* of assimilation. The plant has no stomach or cavity to receive solid food; its channels of circulation can be permeated only by liquid or gaseous forms of matter. Its soil-food must therefore enter in the form of *solutions*, which are taken immediately into the circulation.

Domestic animals and all the higher orders possess open channels which convey solid food into cavities with digestive apparatus, wherein indigestible are separated from digestible parts; the former distributed among the organs of *excretion*, which pass them off; the latter propelled by vital forces through the channels of circulation until assimilated.

It is true, we have been recently told, that some plants take up food, at least silica, and dispose of it without its dissolution, assimilation or excretion; that is, they build up with solid unassimilated blocks, as masons concrete walls; but I am not sufficiently advanced to appreciate the anomaly.

The ostrich is said to take glass, nails, &c., into his digestive apparatus, and so he may, and dissolve them, appropriating what is useful and excreting what is pernicious or useless.

But even the boys would be surprised to find

nails, scraps of glass, &c., mechanically arranged, so as to form a chief part of the integuments, or even of the scales on the legs, &c., and might call it a concretion of glass, nails, &c., instead of an ostrich.

The process of assimilation in plants ceases at maturity, but in animals continues till decomposition commences or death ensues. In these the process is kept up by the constant breathing out of atoms of the body, which, in healthy bodies, are restored by assimilation of food, thus sustaining them; or by an increased or diminished amount of food, increasing or diminishing the weight as the acquisition or loss preponderates, depending on the quantity and quality of food and the vigor of the digestive organs.

In the power over solid food animals have the advantage; but in some respects plants have it. They assimilate merely chemical combinations in solution, while animals require the further vital combinations of the same elements.

For instance, plants take phosphorus in the mineral state of phosphate of lime, magnesia, &c., while animals require further preparation, involving vital forces, which cannot be accomplished by merely chemical forces; that is, the phosphorus must previously have been *vitalized* by assimilation into plants, or it will be poisonous to animals.

Carnivorous animals, indeed, require the still further process of its assimilation into the flesh of other animals before they can digest it; but to animalize it renders it unfit for the herbivorous tribes.

After all, the practical all-pervading law to be kept in view, is that the same *elements* are required in the structure of all the higher orders of plants and animals, and that certain different combinations and preparations are necessary for the different sorts of creatures.

As phosphate and carbonate of lime form about half the solid parts of bones, and man and other animals reject it, until organized into plants, lime becomes a necessity not only to plants, but essential to their performance of the office of food for animals. Yet we are told it does not directly feed the plants, but does a wonderful sight of imaginary things.

Farmers' Clubs.

The *American Agriculturist* discovers from reports to the Agricultural Department that 1,897 farmers' clubs exist in the United States, and that only 548 of these have libraries, while 1,349 clubs are without a single book. There are, doubtless, hundreds without books that never reported, greatly increasing the shame. The *Agriculturist* indulges in some naughty talk about these bookless clubs, and, with vain inquisitiveness, wants to know: "What do the members of these clubs talk about? Without books or papers to inform them, the conversations can have but little good result. Perhaps this may account for the very wide differences of opinion about very simple matters or questions, that are settled as certainly as the sun rises and sets. Things are constantly talked about and discussed, and experiments proposed and made over and over, that have been decided years ago and the results given in standard and perfectly trustworthy books."

And the same journal thinks the more intelligent a man may be, even a farmer, the more valuable will be his labors.

This is very good reading for the clubs, the granges, and even outsiders, and ought to be passed freely around. L. H. MCGINNIS.

Shenandoah Co., Va.

The Need of an Agricultural Experiment Station in Maryland—Individual Experiments.

Messrs. Editors American Farmer:

I have not been unmindful of the subject of our repeated conversations in regard to the importance of an agricultural station in our State, similar to that of Connecticut, the Bussey Institution of Massachusetts, and those of other States, and having for the past eleven years been experimenting on a poor, exhausted farm, I am fully convinced that great good can be accomplished by a proper management of an experimental station, and propose to give you the result obtained from one of my fields, to illustrate the importance of experimenting before running into the expense of purchasing the many nostrums that are offered to the poor farmers as a cure-all for their non-productive fields. Having been badly sold once in that line, it taught me a lesson to handle such things *with care*. Undoubtedly chemists have done much for the farmers' interest, and for what they have done I give full credit. Their failures, however, which have cost our farmers millions of dollars, should be a reminder of the importance of first ascertaining just what is wanted for their land, and that requires a few simple experiments, when it is known that the soil has the proper physical or mechanical conditions, and above all proper drainage; (for without heat and air all fertilizers will fail.)

With private experiments it takes a year to fully determine actual results, but with an institution such as you propose, the experiment can be carried on during all the year by a properly constructed building, heated and ventilated. To do this requires an outlay too great for private enterprise; hence, the importance of the State making the necessary appropriations, and I know of no better place than the so-called agricultural college to start the business; therefore I fully endorse your views so often expressed on this subject.

The foundation of all wealth, all prosperity, and, I may add, all true pleasure and happiness, is successful husbandry; for without it we would soon drop into barbarism, and be no better than the savage or roving Indian; and to make it both pleasant and profitable should be the aim of all prudent, well-thinking men. Truly can I say that the past ten years of my life have been more like a pleasant dream, each succeeding year adding to its intense interest, in watching the development of each experiment, seeing not two or three blades growing where only one grew before, but counting them by the dozens. Such has been the actual results, and accomplished with very little outlay of money. As the result of my experiments may be of some interest to a portion of your readers, I will state that just twelve years ago I purchased a farm on

the shore of our beautiful Chesapeake. The location being everything desired, no regard was paid to the land, the purchaser being too verdant to know anything on that subject. Having occasion to visit the farm during the spring and summer of 1865, I was surprised to find no appearance of grass, clover, or any growing plants that make country scenery so lovely in spring, and afford such attractive food for animals fed on dry fodder during the cold winter months. In reply to inquiries on the subject the universal answer was: "Why, don't you know the land is too poor to sprout peas, and that everything you put on it sinks like a stone in water."

Being extremely fond of milk, and abundance of that nutritious and important food being among the many castles I had built, I was sadly disappointed at dinner by our usual allowance of about one-third of a tumbler placed alongside of our plate, with the positive assurance that it was no use to ask for "more." Seeing some half a dozen cows about the place, I inquired of Mrs. I, the tenant's wife, how it was that she had so little milk. "Oh," said she, "this is the meanest place I ever lived on; it actually dries up the cows." Poor comfort, and made me think about everything sinking, including the few thousand dollars paid for the place.

The future I leave for facts to speak. Suffice to say that long since, from the same number of cows, I have hundreds of pounds of butter, as well as thousands of gallons of milk fed to the hogs, after supplying a large family with all they can drink.

My experiments commenced with field No. 1. No. 2 was planted with oats when the place was purchased. No. 1 contains about twenty acres, and the best on the place, and was being prepared for corn, and at the solicitation of a friend, who was then an agent for a popular so-called fertilizer or ammoniated phosphate, I was induced to purchase three tons, costing \$180, which was sent over and applied to the corn-field in hills; the free sulphuric acid nearly ruining my tenant's hands. The corn crop from the whole twenty acres tells the tale of the value of this worthless stuff used. I am glad to say it has long ago passed among the things that *were*. I was not present when the corn was divided, and cannot say whether I got my full share (one-half) or not, but I do know that it did not exceed seventy-five bushels; another reminder of the *sinking business*. But the elephant must be fed.

The following spring, after a winter spent in reading up the best authors on agricultural literature,—and just here let me add a word of gratitude to the great and immortal Baron Liebig,—my experiments commenced in the same field, which was plowed and sowed in oats and clover, with a dressing of about 200 lbs. to the acre of bone ash and bone black, intending to abandon forever the use of any ammoniated phosphate. This was the spring of 1866. The oats only gave a moderate crop—350 bushels; but the clover took finely, and the former owner of the farm told me it was the best clover he ever saw on the place, and had lived on it all his life. The following year, 1867, it was mowed, affording abundance of provender, and filling a

small barn for the first time in many years, and making the starting point for an increase of stock to eat it. In a few days I had fine pasture, which was taken advantage of by the cows, &c., and then the "sunken milk" began to flow upwards, and has continued to the present time. The next spring, 1868, it was again planted in corn; of course, using manure over a portion of it, but continuing the use of bone ash and bone black,—the latter treated with acid to render it soluble, and drying with the accumulated ashes and dry earth. The crop, although not entirely satisfactory, was such a *great improvement* over the first one, it afforded some satisfaction and pleasure in seeing the gradual improvement. The spring of 1869, it again went in oats and timothy, (the latter being the first that had been sown for many, many years) again using about 100 lbs. of bone black to the acre.

At this point I desire to call the attention of the reader to the fact that I avoid altogether ammoniacal matter, believing, with Baron Liebig, that all soils contain a hundred times more ammonia than is necessary for a crop (Laws of Husbandry, page 290.) The thrashing machine turned out 742 bushels of oats from a sowing of 30 bushels, with a fine set of timothy, which was pastured that fall to a limited extent, again increasing the upward flow of the sunken milk. The following year, 1870, the mowing machine was heard on the place for the first time. The barn soon filled with elegant hay; another old building 24x24 was repaired with a new roof and also filled, and three stacks besides. The price of hay this season being very high, and it bringing the top price and passing for No. 1 Cecil hay, I sold about \$600 worth, and wintered over twenty head of horses and cows. (I find, by reference to my cash book, the hay was sold the summer of 1871, and brought \$36 per ton.) The field was mowed in 1872 and 1873 with a fair yield, but evidently declining rapidly it was again planted in corn in 1874, and by estimate husked about 600 bushels in 1875. Never having tried wheat, and failing several years in succession to get a good set of grass with oats, determined to try wheat, and accordingly plowed it in summer and sowed wheat and timothy early in September; sowing twenty bushels of the former and six of the latter, I got 240 bushels of wheat, and have never seen such a fair prospect for grass. It has taken beautifully, apparently every square inch covered; and with a view of trying different compounds, a small plat was laid off in March, 1876, and the following articles applied in heavy doses:

No. 1. Dissolved bone ash. No visible effect.

No. 2. Fine ground raw bone. No visible effect.

No. 3. Plaster. No visible effect.

No. 4. Diluted sulphuric acid. No visible effect.

No. 5. Marble dust, (dolomite or Texas carbonate lime and magnesia.) With this the effect was plainly visible up to late in the fall, and am now anxious to get them to see what will be the result this spring. My impression is that magnesia is a very important ingredient of the soil for successful results in growing crops, and one often overlooked.

No. 6. A solution of sulphate ammonia was applied with a watering can, which certainly caused the wheat and grain to grow rapidly, with a dark green color; but by harvest time there was little or no difference from the rest of the field, except that it was all down, and the stems still quite green when all the other was fully ripe.

No. 7. A solution of nitrate of ammonia applied as above and with like results, showing that ammonia is certainly a stimulant. Numerous heads of wheat were carefully examined and the grains counted, with no evidence that the ammonia increased the crop a single grain.

No. 8. A solution of muriate of potash was applied same as the ammonia, but with no apparent result. From this experiment I conclude that my field needs either lime or magnesia, and the latter I intend applying alone, either as a sulphate or ground magnesite, (carbonate magnesia,) this spring, to see if any effect is produced. It is possible that the bone and other substances applied may show some action this spring, and I shall watch them attentively.

Such experiments could be carried on during all seasons and conditions of weather in a regularly constructed building where the non-productive soils could be tested, of which we have many thousand acres in our State, that undoubtedly could be made both productive and profitable by proper applications of the needed plant-food, and with no great expense.

I do not claim any great success for my land, but one consolation I have, it has cost me very little money, not an average of \$100 a year, counting the \$180 thrown away in a worthless ammoniated phosphate. I am glad to state that one of our principal and most reliable manufacturers is now, and has been for some time, manufacturing a simple super-phosphate, entirely or nearly so free of ammonia, and I hear of its great success wherever used. In my next I hope to be able to continue the warfare I have urged against the popular error (as I think) of the necessity of using 20 or 30 per cent. of such stuff as old leather, burnt cracklins, rotten fish, spoilt beef, dried entrails, &c., &c., for the sake of producing 3 per cent. ammonia, the smell of which proves its homeward course to the atmosphere to be returned along with the carbonic acid, at proper times, as the plant may need both. Ammonia, like carbonic acid, is a movable body, influenced by rains and winds, and when a growing plant exhausts a soil of either, it is replaced, the same as water is from the atmosphere, entirely unlike the mineral elements which are fixed and when exhausted must be replaced by the aid of man. To find out which one of the few fixed elements needed is the great secret, and no dependence can be placed upon the certificates of scientific chemists or the knowledge of speculating dealers in just the thing for tobacco, cotton, corn, wheat, &c.

This subject is one of great importance, and it is to be hoped some of our practical farmers will give the public the benefit of their experience and knowledge; for if, as I firmly believe, the artificial application of ammonia is unnecessary, "there is millions in it." In conclusion, I will say that my overseer has positive orders to pile his manure so as to keep up a heat if possible all

winter, as has been the case with his pile the past winter,—the heat produced by the fermentation evaporating the water and free ammonia and reducing the mass to as near a mineral condition as possible, and until that condition is obtained it is impossible for the plant to take it up. Organic or vegetable matter does not produce organic matter, but owes its origin to inorganic, namely: water, air, the latter including carbon or the charcoal of the plant and nitrogen, and the mineral matter of the soil. With all these elements, and in proper proportion, nothing will be accomplished unless the mechanical condition of the soil is in proper trim.

On this latter subject much can be said; enough for the present to say that *heat, air and water* must be present, and unless the soil is in such a condition to admit them, all our efforts will amount to nothing and our fertilizers thrown away.

Where is the farmer who has not seen the effect of good hickory or oak ashes, the rich dark green foliage produced by their application. I pause for an answer. Where is the ammonia in them? A. P. SHARP.

Baltimore, Md., April 20, 1877.

What Fertilizers to Use.—Farmers their own Experimenters.

"These experiments, it is true, are not easy; still they are within the power of every thinking husbandman. He who accomplishes but one, of however limited application, and takes care to report it faithfully, advances the science, and, consequently, the practice of agriculture, and acquires thereby a right to the gratitude of his fellows, and of those who come after. To make many such is beyond the power of most individuals, and cannot, therefore, be expected. The first care of all societies formed for the improvement of our science, should be to prepare the forms of such experiments, and to distribute the execution of these among their members."

ALBRECHT THARR,

Principles of Rational Agriculture.

"I have a piece of old land that has been somewhat worn down by a number of years cropping. It is such and such a kind of soil, has been treated so and so, and I want to get such a crop, and at the same time bring it into good condition. My supply of stable manure is short. Will it pay for me to try guano, or super-phosphate, or potash salts? If so, how much shall I use?"

This is a type of a great many inquiries I receive. I wish I could answer them, but I most certainly cannot. Chemists cannot prescribe for soils as doctors do for patients. It would of course be very easy to take the analysis of a given crop, and say, "this requires so many pounds of nitrogen, so many pounds of phosphoric acid, lime, potash and so on. These will be furnished by so much sulphate of ammonia, super-phosphate and sulphate of potash." But very likely the soil would supply enough potash of itself, and the sulphate of potash would not be needed. The crop may have the power of making use of the compounds of nitrogen already stored in the soil, or supplied by the atmosphere, so that at least part of the nitrogenous material will be superfluous; the application of gypsum

is often an equivalent to the addition of potash and magnesia, since gypsum tends to liberate these from their combinations in the soil, and thus render them available to plants. So likewise lime may often be applied instead of the guano or phosphates, with good results, and at but a fraction of the cost. The physical conditions of the soil may be such as to very materially affect for good or ill the action of the fertilizers, and thus the formula, fine as it would appear in theory, will be apt to be far from economical in fact.

Stable manure is a complete fertilizer. It contains all the ingredients of plant-food, and its organic matter improves the mechanical condition of the soil besides. It is a standard fertilizer, and useful everywhere. To learn by what artificial fertilizers this can best be supplemented, in any given case, is, as I have often insisted, a matter best settled by experience and experiment.

For farmers who have not their own experience, or that of others in like circumstances, to guide them, the most sensible plan is to try experiments on a small scale, with different trustworthy fertilizers of high grade. The ones that prove most satisfactory, can then be used in large quantities with confidence.

This idea is by no means original with me. I suppose that if any one versed in these matters were to mention the men generally conceded to be the leading authorities in agricultural chemistry at the present time, the first names would be, in Germany, Wolff, Stockhardt and Knop; in France, Boussingault and Ville; in England, Voelcker, and, in this country, Johnson. Now every one of these, except Boussingault, in whose works I do not recollect to have seen anything of the sort, not only recommends such experiments, but has given more or less specific directions for them. In a little book on fertilizers by Wolff, which I have at hand, no less than seven pages are devoted to plans for farm experiments with special fertilizers.

Prof. Johnson says: "This method consists in observing the effect of each element of plant-food, or of each available fertilizer, applied by itself to a plot of suitably prepared ground, upon a crop or a succession of crops." For many ordinary purposes plots of small area—a square rod each—are sufficient, if the soil is uniform in quality and depth over a considerable surface, as shown by the uniform stand of the crops in former years. It is better, however, to have a long and narrow plot of ten or fifteen square rods area, because the inequalities of the soil are less likely to disturb the results. The ground being prepared for a crop, a number of the measured plots or strips are laid off, and different fertilizing matters are applied to them in appropriate quantities. On one, for example, use gypsum; on another fresh slacked lime; on another superphosphate, made from bone ash or bone black, and oil of vitriol; on another pulverized "blood and meat scrap," rich in nitrogen, but nearly free from phosphates; on another sulphate of ammonia; on a sixth muriate of potash; on a seventh a nitrogenous phosphate, or a fish guano; on an eighth stable manure, etc. Two or three plots with no manure should intervene, to make a basis for comparison. The experiments should extend over a series of three or four years, the

same plots being each year treated with the same kinds and qualities of fertilizers, but cultivated with different crops.

PROF. ATWATER, in *American Agriculturist*.

[An illustration of the usefulness of such tentative applications was recently given us by a professional gentleman of this city, who also manages with skill and success a farm on the Eastern Shore of our State, and who, with his experience and intelligence, falls short of his whole duty to his fellow-agriculturists, that he fails to give them more frequently the results of processes applied by him and founded on scientific principles not always followed by farmers.

On his farm in Kent, this gentleman had a field which evidently needed the application of some lacking ingredient—it was palpably sick. Oyster shell lime was tried with no effect; bone-dust, potash salts, super-phosphate followed in turn, but no improvement resulted from either. It then occurred to our friend that perhaps *magnesia* was lacking, and a dose of Baltimore county magnesian lime-stone was tried, with a success that seemed to indicate that he had hit on the constituent deficient in the soil. Further observation will confirm or overthrow this supposition, and we should be glad to know the final result.

P. S.—Since the above was placed in type, Dr. Sharp, the gentleman alluded to, has kindly furnished the communication immediately preceding this article.—*Eds. A. F.*

BREAD.—The following is the recipe by which the celebrated Vienna bread was made, that became so famous on the Centennial grounds for its deliciousness as to command four prices, indeed to sell for far more than it was worth.

Sift in a tin pan four pounds of flour, bank it up against the sides, pour in one quart of milk and water, and mix into it enough flour to form a thin batter; then quickly and lightly add one pint of milk, in which is dissolved one ounce of salt and one and three-quarter ounces of yeast; leave the remainder of the flour against the sides of the pan; cover the pan with a cloth and set in a place free from draught for three-quarters of an hour; then mix in the rest of the flour until the dough will leave the bottom and sides of the pan, and let it stand two and a half hours. Finally, divide the mass into one pound pieces, to be cut in turn into twelve parts each. This gives square pieces about three and a half inches thick, each corner of which is taken up and folded over to the centre, and then the cases are turned over on a dough-board to rise for half an hour, when they are put into a hot oven that bakes them in ten minutes. [The yeast is the Patent "Compressed Yeast," now generally sold in the large towns and cities.]

The ingredients may be divided into smaller proportions, so that a single one-pound loaf could be baked as well as four one-pound loaves

Live Stock.

The Rational Feeding of Animals.

Messrs. Editors American Farmer:

I read some time ago a book written by Professor Wolf, at Hohenheim, near Stuttgart, on the "Rational Feeding of Agricultural Animals, Founded on New Physiological Investigations." Although the investigations are discussed in a scientific way, and are even considered as not settled fully, yet I thought some of the results given by science the practical farmer might at once turn to advantage, and so I collected all I thought appropriate and send to you.

Yours truly, EMIL WENIG.

Schoenlanke, Germany, March 16, 1877.

Long ago our students of physical science made the greatest effort to discover the natural laws of animal nutrition. In the year 1843, Professor Liebig in his work on Organic Chemistry, in its application to physiology and pathology, gave for the first time a true picture of the preceding nutrition in animal organism, and at once the first foundation of instructions in feeding animals rationally. He divided all nutritious matter into materials for respiration, producing caloric for the body and plastic materials to produce blood, flesh and bones. Materials for respiration were considered to be free of nitrogen, viz: carbonaceous matter, sugar, starch, fat; plastic materials, all nutritious matter containing nitrogen or albumen. Since then a great many other learned men have experimented in feeding animals, to settle the question how much nutritious matter an animal wants in its different periods of life, and what percentage of nitrogenous matter, and how much of matter free of nitrogen this nourishment ought to contain, to build up the body and warm it at once. Therefore it was necessary to analyze all kinds of plants and food to learn on an average their contents of water, mineral substances, organic substances, cellular tissue, matter rich in and free of nitrogen or albumen. But not all these stuffs are digestible, and so the second question was: what percentage in all different kinds of food is digestible; as only the last is considered to be nutritious matter fit to nourish or build up the body. The digestibleness of fodder could only be proved by analyzing a certain quantity and quality of food, feed it to animals, collect all their excrements, analyze them again, and the difference between fodder and manure gives nearly the quantity of matter, either digested and absorbed by the animal body, or thrown out as indigestible as manure. All nutritious matter absorbed by the animals is spent afterwards in forming flesh, blood, bones, building up the body; or for producing milk, wool or muscular strength; or used up by respiration and producing warmth. I said the difference gives nearly the quantity of matter; for to measure and weigh the food and drink and the excretions of an animal body exactly, the animal is kept in a closed room, where, besides his food, even the atmospheric air going to and from the closed room is measured and analyzed. These experiments are continued for a long while, and in a constant

mean temperature. Great efforts and extensive studies are made to fix the laws of animal digestive power and nutrition, to gain a basis for rational feeding, yet the difficulty of coming to conclusion is enormous, since a body is unlike a chemical laboratory. All scientific examinations executed during a series of years in different chemical stations of Germany, are collected and written out by Emil Wolf, Professor at Hohenheim, near Stuttgart. Professor Wolf has long ago made it a problem of his studies, to divide the true nutritious value of all feeding materials, all of which he has analyzed, and the value of which, on an average, he has set down in figures. It is not my intention to follow this scientific discussion, yet I think science is already so far advanced on true authentic foundations that the practical farmer may turn a great deal to advantage.

The first of all questions settled is, that all nutritious matter given to animals is to be given in proportion of one of nitrogenous matter to five or six parts free of nitrogen; or one albuminous matter to five or six parts of the carbo-hydrates, viz: sugar, starch, fat. This proportion is at least necessary when the highest and quickest production of animal power, flesh, fat, milk or wool, is expected. This proportion may be changed a little closer, as one to four; or wider, as one to ten for special cases; that is, in different periods of animal lifetime, or when principally work or milk or mast is expected. A larger difference between these two kinds of nourishment would only keep the animal alive, without gaining any profit on flesh, milk, etc.; a closer proportion would be at least wasting fodder.

This natural mixture of one part nitrogenous matter to five of carbonaceous is only found in good grasses or clover, just when they begin blooming. Fine grass and clover grown on good loamy land, just before blooming, and given to full saffety to animals, is the standard of all food; it is most all digestible and contains all nutritious matter in right proportions. The older they get after blooming, the poorer they get in nitrogen, and the more indigestible they are. Younger plants are too rich in nitrogen, older plants are no longer a normal food for production. It is also a decided fact, that when grasses or clover are mowed and harvested under very favorable circumstances, this dried food is just as rich in nitrogen and just as digestible as the green grass or clover. However, these favorable circumstances are hard to be attained, for mowed grass or hay loses during changing weather, sunshine, dew, rain, a considerable percentage of their most soluble nutritious matter, so that the best grasses may lose twenty per cent. of their value. Drying clover loses even more, when in handling on hot days the finest leaves crumble off. Young lucerne, vetches, lupines, are, when young, even richer than grass; but lucerne ought to be mowed long before blooming,—for it, sooner than any other plant, becomes hard and woody. Lupines, very rich in nitrogen, are, on account of their bitterness, only food for sheep. Sheep are very fond of lupines, and grow fat on them, since cows and horses refuse them. Lucerne, vetches, lupines, suffer likewise by rainy weather when mowed, and lose a great deal nu-

trititious matter when, by harvesting, their fine leaves crumble off. *Spergula arvensis*, (spurry) when given to milk cows, insures the most quantity and richest quality of milk; it contains a rich slimy matter. Green corn, when young, is a wholesome tasteful food for cattle; but it is poor in nitrogen, and ought to be fed in connection with richer food,—bran or oil-cake. Straw of grain is only digestible to about fifty per cent., but it is very poor in nitrogen; straw of summer grain and of legumes is richer in nitrogen.

About more concentrated food, it was observed that grain is mostly digestible, and contains both kinds of nourishment in right proportion; the grain of legumes is still richer in nitrogen and very digestible. Ground malt contains a great quantity of digestible nitrogen, and promotes the production of milk just as well as the mast of animals.

Linseed or rape-seed cakes are very rich in nitrogen, and digestible to about eighty per cent.; cotton-seed cakes are found not to be so digestible.

South American meat-meal, the residuum and fibres of flesh, after extracting the broth, is the most concentrated food of all; is very digestible; especially of great advantage when mixed with potatoes, as food for swine. It is useful to mix a little phosphate of potash with it, for this is all extracted.

A rich and digestible food for swine, as well as other animals, is whey and sour milk, fed in connection with potatoes.

Potatoes are very digestible in any shape, raw or boiled, but rather poor in nitrogen,—so that, to make up the want of nitrogen, they ought to be fed in connection with richer food, as oil-cake, bran, ground malt. The richer potatoes are in starch meal, the poorer in nitrogen, and a poor watery potato grown on cold loamy land or on marshes and moorland is always richer in nitrogen. Potatoes given as food to animals ought at best amount to the tenth part of the whole fodder. They are also rich in phosphoric acid and potash, but poor in lime and soda.

The residues from potato or corn or grain distilleries are very rich in nitrogen, and serve especially for masting purposes. They are mixed with poorer fodder, containing less nitrogen. Yet these watery residues ought not to be fed in too great quantities, for their watery qualities weaken the stomach and bowels. Salt does not augment the digestibleness of fodder; still it raises the appetite of animals for food and water, and so augments the nutritious matter animals take in them, and so, indirectly, the production of flesh and milk. Cattle fed once a while with a little quantity of salt look a great deal brighter and more lively than others.

Phosphate or carbonate of lime is, in some regions, poor in lime, of great advantage, especially for young growing animals for formation of bones.

So far, on the nature of all food. I would lead too far to give the analysis of all kinds of fodder-plants and other provender, concerning their mineral, their organic substances, their nitrogenous and non-nitrogenous matters in figures, since these figures can be given only of their value on an average; they will differ considerably when plants are grown on different

standing places, under different circumstances of culture, in different climates, in dry or wet seasons, whether in shade or sunshine. Likewise changes in the digestibleness of fodder; before any experiments in feeding are executed, the analysis of fodder at command has to be fixed first.

By feeding ruminating animals with hay and straw exclusively, it is observed that the same percentage is digested, be it given in small or full rations; it would be a failure to expect a larger digestibleness of a fodder when given in a smaller quantity. (For instance: when hay contains sixty per cent. nutritious matter, ten pounds of hay will contain six pounds; twenty pounds of hay twelve pounds of digestible matter; the latter will suffice to keep a small cow alive; the first figure—six pounds of digestible matter—will keep her hungry and dry; she is not able to gain more digestible matter out of ten pounds of hay.)

2. Hay of good grass and clover is just as digestible and rich in nutritious matter as the grass or clover itself, supposed it is gained in good weather and under the most favorable circumstances.

3. Grass clover is richer food in its youngest state; the later it is mowed or pastured, especially in its ripening state, the poorer it is in nitrogen and the more indigestible.

4. Climate, temperature, different soils and state of culture, influence the richness of fodder considerably.

5. Grinding or crushing the grains is of great use to the digestibleness of this kind of food; but no benefit is derived by cooking, heating or steaming hay or straw concerning their digestibleness; on the other hand it is likely that the process of cooking, steaming, etc., makes the fodder more savory and obliges animals to take in more food, and augment in that way the nutritious matter within their bodies.

6. All ruminating animals digest hay and straw mostly in a like relative proportion: horses, on the contrary, digest hay and straw less; swine, and all flesh-consuming animals, digest grass only in its youngest state; grain is digested all alike by ruminating animals and others, especially when ground.

7. All ruminating animals digest good hay and straw almost in the same proportion, whether they are growing or full-grown animals; young animals, of course, not before they are weaned from mother milk totally.

After giving the digestibleness of fodder in average figures, as well as their contents of nitrogenous and non-nitrogenous matters, after giving hints in what case, for which purpose and at which periods of life the portion of one to five or six might be a little altered, either closer or wider, Professor Wolf fixed several recipes for feeding animals, which I undertake to transcribe:

Food for old sheep,—per 1,000 pounds of their living weight,—containing:

	Organic sub- stances.	Nitro- gen.	Carbo- hydrat.	Fat.
25 lbs. of hay.....	20.1	1.15	9.10	0.15
5 lbs. of potatoes.....	1.3	0.11	1.03	0.02
Total.....	21.3	1.26	10.13	0.17

Or 20 lbs. of straw	15.8	0.52	7.38	0.16
15 lbs. potatoes	3.4	0.53	3.09	0.04
1½ lbs. cakes rape seed..	1.2	0.36	0.27	0.12
Total	20.6	1.20	10.74	0.32
Or for sheep to be fattened:				
20 lbs. meadow hay.....	15.9	3.08	8.22	0.13
50 lbs. turnips or beets	5.6	0.55	4.55	0.05
3½ lbs. horse beans.....	4.8	1.27	2.40	0.08
¾ lb. linseed.....	0.4	0.09	0.08	0.18
Total	26.7	2.90	15.25	0.40
Or even richer for sheep to be fattened:				
15 lbs. meadow hay.....	11.9	0.81	6.16	0.14
50 lbs. beets	5.6	0.55	4.55	0.05
25 lbs. horse beans.....	7.3	2.07	3.92	0.13
¾ lb. linseed	0.4	0.09	0.03	0.18
Total	25.1	3.52	14.71	0.50

Food for milk cows,—per 1,000 pounds of their living weight:				
	Organic sub-	Nitro-	Carbo-	Fat.
	stances.	gen.	hydrat.	
12 lbs. of meadow hay.....	9.5	0.65	4.93	0.11
6 lbs. straw of oats	4.9	0.08	2.24	0.04
20 lbs. beets	3.4	0.33	2.73	0.03
25 lbs. ground malt.....	5.6	0.97	2.73	0.10
2 lbs. cakes of rape seed....	1.5	0.48	0.36	0.16
Total	24.9	2.51	12.63	0.42

Food for cows,—per 1,000 pounds of their living weight:				
12 lbs. of clover hay.....	9.6	0.94	4.57	0.14
7 lbs. straw	5.7	0.10	2.60	0.04
5 lbs. wheat chaff.....	3.7	0.07	1.64	0.02
80 lbs. residues of a potato distillery.....	3.7	0.80	2.32	0.08
2½ lbs. ground malt.....	2.1	0.46	0.95	0.04
1 lb. of cakes of rape seed....	0.8	0.24	1.13	0.05
Total	25.6	2.51	12.26	0.40

Food for working oxen,—per 1,000 pounds of living weight:				
12 lbs. clover hay.....	9.4	0.81	4.57	0.13
16 lbs. straw	13.1	0.22	5.94	0.08
3 lbs. ground horse beans..	2.1	0.58	1.09	0.04
Total	24.6	1.64	11.60	0.25

Food for oxen to be fattened,—per 1,000 pounds of living weight:				
10 lbs. of clover hay.....	7.9	0.70	3.81	0.12
5 lbs. straw	4.1	0.07	1.86	0.03
5 lbs. wheat chaff.....	3.7	0.07	1.64	0.02
24 lbs. potatoes.....	8.4	0.71	7.00	0.10
4 lbs. of cakes of rapeseed..	3.1	0.97	0.73	0.31
Total	27.0	2.52	15.04	0.58

Food for oxen to be fattened quicker,—per 1,000 pounds of their living weight:				
10 lbs. clover hay.....	7.5	0.70	3.81	0.12
2 lbs. straw	1.6	0.03	0.74	0.01
34 lbs. potatoes.....	8.2	0.71	7.00	0.10
5 lbs. wheat chaff.....	3.7	0.07	1.64	0.02
4 lbs. of cakes of rapeseed..	3.1	0.97	0.73	0.31
2 lbs. of ground vetches....	1.7	0.59	0.87	0.05
Total	25.1	2.93	14.79	0.61

[In view of the steadily increasing magnitude of our meat-growing interest, the investigation of the principles which govern its production becomes of more and more importance, and Mr. Wenig deserves the thanks of ourselves and our readers for his interesting summary of the conclusions of Prof. Wolf, for the clearness with which he presents them, and for the patience and care he has shown in preparing the specimen tables. His voluntary service is the more worthy of a grateful recognition that Mr. W. is at the labor of writing in English; but his familiarity with that tongue and his interest in our agricul-

tural enlightenment and advancement, both come from his residence for some time in the United States. We hope, when his engagements permit, to hear further from our obliging correspondent.

—Eds. A. F.]

Thorough-breds vs. Natives and Grades.

Messrs. Editors American Farmer:

The Farmers' Convention of Montgomery Co., Maryland, held in the Lyceum at Sandy Spring, on the 11th of January, 1877, is a very interesting annual assemblage of our most intelligent, practical, and worthy citizens; many of whom have done as much to advance the agricultural interests of this and adjoining counties, and perhaps in our State; as any other persons. This convention is made up of the various Farmers' Clubs, and associations which abound here—some of which have existed for perhaps more than a generation. Hence the solid vote of this convention upon any agricultural question may be looked upon as a watchword.

I have before me your February number of the *Farmer*, in which the proceedings of this convention are published in full—wherein is this question: "Considering the heavy first cost, does it pay to keep thorough-bred stock?" "This question having been submitted to a vote, was decided adversely to thorough bred stock; although it was admitted on every side that there was no gainsaying the advantage of improving ordinary stock of any kind, by the use of thorough-bred males."

"Some of the members argued that grade Jerseys were harder than thorough bred," &c. I am sorry this vote was given "adversely to thorough-bred stock," because it does not represent the sentiment of our community; and as far as I have talked with the members of that convention, they regret the vote. The bug-bear was the "heavy first cost," which is a very important consideration at a time of such financial stringency and prevalent bankruptcy and ruin.

In regard to the want of hardness of thorough-bred Jerseys as argued by some, allow me to say, I have had an experience of 12 years with thorough-bred Jersey stock, and I find if they are kept as good milk-cows of any breed, or natives should be kept, they are quite as good keepers, and it costs no more to keep them. I think I can bring a "cloud of witnesses" to say the same.

"The heavy first cost" does not amount to much, for one or two animals. If those in want will keep away from the wealthy "fancy stock-raisers," and go to a plain, practical farmer, the difference in "first cost" between a thorough-bred and a grade or "native" calf, would not be likely to be more than from \$25 to \$150, for the average of thorough-bred Jersey calves. It seems to me unwise policy to hold back for so small a sum to start a thorough-bred herd upon.

There are many farmers who will risk more than that difference in a suit of broad-cloth, when the "native or grade cloth" will answer just as well. If we admit the advantage of improving our common stock of "any kind" by "keeping thorough-bred males," why not have all thorough-bred and reap all the advantages there are in thorough-bred stock? especially

when it can be done at so small an outlay for one or two animals to start a herd with. There is a wide difference in "pay" between a herd of thorough-bred Jersey cows that will average, each, 300 pounds or upward of butter in a year, and a herd of common cows that will average 200 or 250 pounds. Also, a wide difference in "pay" in selling a thorough-bred Jersey calf a week old for from \$25 to \$100, and a common calf at 4 weeks old (veal) for from \$5 to \$8.

A few days after the adverse vote of the convention, our worthy and enterprising citizen, George L. Stabler, sold two yearling Jersey heifers for the sum of \$275 cash. He has a yearling Jersey heifer out of an old Jersey cow I sold him for \$80, that I doubt whether \$200 cash would buy it. I wrote to Wm. S. Taylor, of Burlington, N. J., a few weeks since to price a male Jersey calf. He sent me his catalogue, in which the prices range from \$50 to \$250.—His heifers and cows range from \$150 to \$600. Charles Sharpless, of Philadelphia, Pa., bought of J. Carter Brown, of East Greenwich, R. I., his Jersey cow Pansy for \$2,500. See *Colman's Rural World*, Jan. 31st, 1877. I could produce page after page of such testimony, but the above is enough to show the difference in "pay" between keeping thorough-bred Jerseys and grades or Natives.

Let any one who is interested in this matter, (and all farmers should be,) take his pencil and make a calculation for a series of 5, 8 or 10 years, and see what a splendid herd of cattle he will have from one or two heifers to start on, and what will be their value. The "pay" is enormous! and from an outlay of from \$50 to \$150.

Then go through the same estimate, on the basis for grades or natives, (not deducting one-fourth for failure as should be done,) and see how puny the result.

We have briefly discussed thorough-bred cattle; let us change the subject to sheep, which will be very appropriate this cold March night, whenever the thought of 18-pound Cotswold fleeces makes our bodies glow. We get a quicker return with thorough-bred sheep than with cattle, but the result as to great profit in thorough-breds holds true.

In making my estimates as given below, I have been at some pains to get the experience of others, as well as my own, and which so nearly agreeing, enables me to give them with more confidence than I otherwise could do, and I here express my thanks to the parties applied to for so kindly furnishing me with their experience. The estimate that I have given of natives or unimproved stock are above what the same character of stock would have been fifty years ago, before the means of inter communication were as extensive, as quite certain, and as cheap as now,—so that most if not all the stock in the Northern and Middle States are more or less infused with improved blood. The average weight of native sheep when slaughtered for the shamble, 6 months old, 25 pounds; 12 months old, 35 pounds; 24 months, 45 pounds; weight of fleece 3 pounds.

Grades will rise considerably above these figures.

My good neighbor, Thomas J. Lea, who is extensively engaged in butchering, as well as in breeding improved stock, kindly furnishes me the following for thorough-breds: The average weight of thorough-bred mutton-sheep, Cotswold, 200 pounds; Southdown, 125 pounds; Leicester, 250 pounds.

Six months old, 80 to 100 pounds; 12 months old, 100 to 150 pounds; 24 months old, 125 to 250 pounds. Fleeces—Cotswold and Leicester, 10 to 12 pounds; Southdown, 5 to 6 pounds.

From a postal card I received from J. W. Ware, Esq., of Clark Co., Va., I will tell what he says:

Feb. 5th, 1877. Dear Sir: "Yours of 5th received. * * * * Three of my lambs—muttons part bred fattened to fall after 2 years old, (I think) one weighed gross 332 pounds—net or dressed 234 pounds; the other two, (twins,) one weighed 285 pounds live—dressed 202 pounds; the other 286 pounds live—192 pounds dressed.

I never averaged my fleeces. The heaviest fleece I ever had was 18½ pounds, well washed. * * * * The heaviest buck I ever had weighed the fall after 1 year old 434 pound." * * * *

If I have not tired your patience, I would like to talk with you a few moments about Swine. I have never been able to realize a large net profit on swine, but they are one of the indispensables to the farmer and to the housekeeper.

The average weight of native hogs, 6 months old, 75 pounds net; 1 year old, fattened for the shambles, 150 pounds net.

The average weight of thorough-bred Berkshires 6 months old, 140 pounds net; 1 year old, fattened, 300 pounds net,—a gain of near 100 per cent.

Does it require as much food to keep Berkshire hogs as it does to keep natives? Answer: "Being more quiet, they require less."

There is a department of farming which should claim more attention than it does—the Poultry. This, like the balance of live stock, has undergone great changes for the better, but like all other things, whether animal or vegetable, are very prone to go back to their normal condition—hence requiring constant watchfulness and attention, and a good knowledge and appreciation of the principles of breeding for improved stock.

I think a thorough-bred Dark Brahma will quite double in weight such as were raised before the introduction of the foreign breeds.

We have talked of cattle only as milch-cows. I would like to give you the experience of one of our most experienced citizens in answer to my questions as regards beef-cattle.

The average weight of native steers 1 year old, 300 pounds gross; 2 years old, 500 pounds; 3 years old, 750 pounds; 4 years old, 1,000 lbs.

The average weight of thorough-bred cattle—beef:

	Durham.	D. von.
1 year old.....	600 lbs.	800 lbs.
2 " ".....	1,000 "	750 "
3 " ".....	1,400 "	1,000 "
4 " ".....	1,800 "	1,350 "

Thorough-breds gain about 63 per cent. on the Natives.

We will have to defer this talk to a future time, except to say, that we would like very much for our brother farmers to consider the

difference in value between the thorough-bred Percheron horse and Natives, or even a grade.

Very truly, yours, &c., WM. J. SCHOFIELD.
Montgomery Co., Md., March 19th, 1877.

Hog Plague.

(Continued from American Farmer for April.)

Messrs. Editors American Farmer:

Since my former report the last one of the five pigs under observation here in town has died, and with the exception of one—a weakly runt,—all have been carefully examined after death. The same disease of the lungs heretofore described has been found in all, differing only in degree of advancement. The last two pigs coughed rarely, and one never lost its appetite for food, such as milk, meal and water, table scraps, fresh fish, bread soaked in milk, and corn, to the last. This pig was sick 16 days, slowly wasting from day to day, became blind on the eighth or tenth day of the attack,—yet he took his daily ramble in the rear lot, and, although perfectly blind, would at night instinctively seek and find his bed of straw under a shelter. The most careful examination of his intestines, filled with soft natural excrement, showed no signs of disease. The lungs were in the condition we doctors call *gray hepatization*; there was some pus in one lung, and lymph on the pleura with adhesions.

These pigs were not subject to any medication. On the farm the disease has entirely disappeared; the convalescent are gaining flesh, and meet the hog-feeder with glad squeals; but its effects will, I presume, remain for months to come.

About ten days since, the sow—a young Jersey red Berkshire—previously reported as the only one that had the disease and recovered without aborting, gave birth to seven pigs. Three were found dead soon after birth, the rest were feeble and all died within a week. The same, I learn, has been the experience of my neighbors with sows in pig, which had had the disease; and a few state that this blood-disease so thoroughly impresses the system of the animal that her future usefulness as a breeder is in great part destroyed. Another curious thing occurred in reference to the influence of this aerial hog-poison on conceptions. While it prevailed, the sows took the male in vain sundry times, without conceiving, and my ten-months old Poland-China boar serving about twenty sows for myself and neighbors, during six weeks, so often failed to impregnate, that he began to lose reputation.

All the facts that I have been able to gather from my own observation and the experience of others, therefore, tend to confirm the *epizootic nature* of the disease as well as the fever and blood-poisoning, and we must await further investigation before we can positively decide as to the spread of the affection by contagion. In general, diseases of this kind in the human family, called epidemics, are contagious, and are guarded against by boards of health using preventive measures, and treated as contagious, and it is certainly prudent to do the same with our hogs.

In my vicinity it has destroyed the major part of the hogs on sundry farms, leaving a farm here and there entirely untouched, and then a

district of several miles will escape for a time, and quite suddenly the malady will invade the premises when the farmer hoped he had escaped it.

Treatment.

The intelligent farmer will readily apprehend from what has already been stated as to the nature of this affection, (quoting from my former article) an "Epizootic hog fever, in which the blood is poisoned, and during its progress various organs are attacked, frequently runs its course so rapidly that the animals die from congested lungs or brain before inflammation occurs." The treatment, therefore, presents two prominent indications, both of which, from the nature of the animals to be treated and the disease, are fulfilled with difficulty.

The first indication of treatment is that of prevention.

The second, that of the administration of such disinfectant and antiseptic remedies as are known to modify, if not remove, poison from the blood.

In the lung-plague of cattle to which I alluded in my last as being both in nature, symptoms, and post-mortem appearances similar to this hog-fever, it has been found that carbolic acid used freely externally as a disinfectant and administered internally as antiseptic, to animals in good health, placed for experimental purposes in the same stable with infected animals, has so modified the disease so fatal in its character, as to render it in many instances within the reach of remedies, perhaps assisting that power inherent in animal life to throw off the poison.

The use of carbolic acid administered with the food appears to me the most rational means of fulfilling both indications. When the disease prevails in the vicinity, all means of contact with diseased animals should be avoided, and strict attention paid to regular feeding of the hogs in pastures or enclosed woods, administering daily with the food carbolic acid in solution and sprinkling the hogs' bodies with the same.

When the disease was at its height among my hogs, this was done, (4 oz. strong acid to 3 qts. water.) but not until many had died, however. The disease soon disappeared, but I cannot say whether the treatment was of service, or that the malady had expended its force.

To-day I received a postal-card from A. D. Rhea, Loudon county, Tennessee, with the following, which I offer your readers: "Have read your article in the *American Farmer*. When your hogs refuse to eat give a table-spoonful to each hog of the following: Coal oil, spirits turpentine, whiskey and laudanum. If costive, use two table-spoonful of castor oil. I have tried the remedy often and never lost a hog I gave it to. Directions: mix the four articles in a bottle, shake, and drench hogs like a horse." I presume he intends these quantities for grown hogs—half an ounce of laudanum to a pig, appears to me a large dose, when we commonly use only an ounce dose for a horse.

A number of similar remedies to the above have been used without results by our people here. Spirits turpentine, both externally and internally, in the experience of some, has given good results. Sulphur-flowers (2 drachms) and saltpetre (1 drachm) mixed and given three times daily in dough is sworn to cure by one farmer

who owned seven pigs. Four had died; *three* which took this remedy did not die.

The sick hogs should be removed at once from the herd and *not* penned, but placed in a lot if possible where there is grass and running water, and fed on easily digested food, boiled feed, dough, milk, bran mixed with feed if constipated; red-oak bark tea and laudanum mixed with corn-meal dough if diarrhoea comes on.

Charcoal and ashes should be kept in troughs easily accessible. One of our best hog-raisers used frequently glauber salts in solution (teaspoonful of salts) to each hog when they do not

relish their food; gives this in dough twice daily.

My impression is that more can be done by hygienic measures in prevention and attention to the hogs in regular feeding and changes of feed to keep up the appetite, and in good health and thrift, than any direct medication by drugs when the animals are once attacked. While carbolic acid and spirits turpentine are used as internal and antiseptic remedies, constipation or diarrhoea treated as indicated, it might be well to try Mr. Rhea's whiskey and coal oil in the general debility which comes on early in the disease.

Suffolk, Va.

G. W. BRIGGS, M. D.

South-Down Sheep.



(A group, the property of John D. Wing, Millbrook, N. Y.)

The quality of the meat of these sheep is well known, and by epicures is ranked above that of any other breed. Mr. Wing, according to *Wallace's Monthly*, formerly imported, and bred largely of, the Cotswolds, but of late has devoted his entire attention to Southdowns,—his flock having been built up from animals from Henry Webb, the son and successor of Jonas Webb, and from Lord Walsingham's now celebrated Merton flock.

The *Monthly* says of these sheep that they were originated, so to speak, by Mr. Ellman, of Glyde, England, and it is to his and his cotemporaries' care and judgment that we are indebted for this improvement of the Down Sheep. Ellman was well seconded by Jonas Webb, of Babraham, since which many careful breeders in England have done their share in bringing the breed to its present perfection.

Among the characteristics of this breed are, fore and hind quarters wide and deep, back and loins broad, ribs well curved, making a level and straight back, legs short, and fine bone; color of face and legs a uniform light-brown color; altogether forming as symmetrical and square an appearance as can be imagined.

Their early maturity and disposition to fatten make the rams very valuable to cross on native and other breeds for production of mutton as well as early lambs. The fleece has not, as a rule, been as much a consideration with breeders as form and size. But Mr. Wing is endeavoring to increase the wool without sacrifice of form, and selects his rams with this end in view.

Several rams at Mr. Wing's were sired by a ram for which \$2,500 in gold was offered and refused, bred and owned by Lord Walsingham.

Sheep Raising.

The following is an extract from an address by Mr. George Lawrence, before the Minnesota Agricultural Society:

Wool in the United States is a great commodity of trade, and its consumption is without limit. Although our country is advanced in years and well established yet we cannot produce wool enough for home demand. Our importations of wool from foreign countries amount to many millions of dollars annually. We paid for wool raised in foreign countries in eleven years, from 1861 to 1872, 573,647,377 pounds, exclusive of shoddy, an average of 52,058,843 pounds, costing in gold at the point of shipment \$39,375,908 or \$8.125,843 per annum. Then the importations of 1872 were 122,256,499 pounds, costing \$36,314,195, and in 1873 we imported 85,496,049 pounds, costing \$20,433,938. These are figures from actual reports. Of the remaining years from '73 to the end of '76, I have no records at hand, but it is plainly seen instead of producing wool enough in the United States for home consumption, we have not done it, and we actually are falling behind, for in 1872 we imported \$18,088,552 worth more than we did in the average of the eleven years previous to '72. In '73 there was a little falling off, but then we paid \$12,308,095 more than an average. Only for the protection we have obtained, at the earnest solicitation of wool growers, and the support of Congress, our annual imports would amount to many millions of dollars more.

Is this vast country of ours inferior to others? have we not the broad acres of fertile soil, and people energetic enough to compete with foreign countries? Is it because we are afraid to enter into competition, or afraid we cannot pay the cost of production?

Articles grown from the soil, and produced on the farm, have fluctuated in prices almost ruinous to the producer at times. Wool has the most uniform price of any article of trade. Randall in his *Practicable Shepherd* says, that for a term of thirty-five years, from the beginning of 1837 to the end of 1861, fine or medium wool averaged 42 and 8-10 cents per pound; since that time it has averaged a trifle less, but in all these long years has the cost of production not exceeded the price realized? The cost of producing wool depends on the keeping of sheep, and the kind kept; and those raised in different sections, on our highest-priced land, under judicious system of winter management, reaches about \$2.00 per head per annum. In the south and southwest, the expense is mainly composed in herding, salting and shearing, and when kept in large herds, the cost will not exceed 25 cents per head. Without a doubt it would be more profitable to provide some shelter in winter, and give a little feed in very bad weather. It might increase the cost in the south and southwest to 50 cents per head. The actual cost of keeping will vary between these two extremes.

Our improved grade merino flocks will average five pounds of washed wool per head; take the average price for thirty-five years before the war, 42 and 8-10 cents per pound we have \$2.14 to the fleece, which would pay the cost of keep-

ing and leave the owner a small profit in money. The increase of lambs will average 80 per cent. at a low estimate. Then the manure besides, which is a very great item, is to be added to the profits. Summer and winter manure of the sheep is far more valuable than that of the horse or cow.

The Berkshire Pig.

We refer to the advertisement in our pages of this month, of our old friend *T. T. Gorsuch, Esq.*, who has again entered into the breeding of this valuable breed of hogs, which, since the time of their first introduction into this State, has continued to grow in favor throughout the whole country, and is now recognized as among the most valued, if not the very best, breeds of swine, as suitable for the purposes of the meat raisers of this country. We must acknowledge that it has ever been our favorite among the other breeds; and some twenty-five or more years ago, we, with Mr. Gorsuch and his brother Edward, and Mr. Geo. Law of this city, were the first to introduce them into this State. Mr. Geo. Patterson, of Carroll county, than whom there was no better judge of live stock of every description in Maryland, early adopted them on his farm, and would never keep any other. In England they were always held in the highest estimation, and there generally designated as the "gentleman's hog," the flesh being considered as superior to that of any other breed. Those who notice the droves of hogs which pass through our streets in such numbers, brought to this city by our railroads from the West, cannot but have observed the large proportion which bear well-defined marks of the Berkshire breed, and show that the skilful stock men of the West have adopted them as filling the requirements of a hog which will mature early, of a fair size, and are good travellers.

The Berkshires and the Essex, of the black breeds; the Suffolk and small Yorkshire of the whites, and the Poland-China of the mixed, are now the choice breeds of this country, and each have their advocates as suiting their localities and special purposes; and as there is about arising a renewed activity in the raising of meats to supply the great demand which is upon us for exportation to foreign countries, it will be our province to keep before our readers all the information upon the subject of raising, feeding and managing live stock, some of the evidence of which will be found in the several valuable papers upon the subject which will be found in this month's number of the *Farmer*.

Whilst upon the subject of Berkshires, we will add the following remarks from the *American Agriculturist*, as in the main correct, and embracing in a small compass the comparative merits of the rivals of the black breeds:

Black or slate-colored pigs are freest from skin diseases in hot climates. The choice is practically between the Essex and Berkshire for males with which to improve the native stock of hardy grubbers of the root-or-die variety. Those who have tried the former have been delighted at first, but after a few years began to recall with longing the lean hams and thin but solid and flavorful bacon of the old race-horse breed. The trou-

ble with the Essex pigs for the South is that they are not active enough. They are of the eat-and-sleep and sleep-and-awake-to-eat kind, and their grades are, of course, like them. The side fat is superb, and so is the leaf lard, and so far the breed is all that could be desired, but the hams and shoulders are too fat for profit, and the ham is not marbled with fat like the Berkshires. These (the Berks) are much more enterprising, more wide-awake, less easily controlled, but good foragers. Their grades are a wonderful improvement upon the original stock, may be made very fat, and yet the proportion between fat and lean in the hams, shoulders and side pork or bacon is such as to develop and preserve the excellencies of their meat. The hams are large and rich, and juicy with diffused fat. Berkshires are not quite so easily fattened when penned and systematically fed as the Essex grade, but they will take much better care of themselves in the woods, and, when penned for fattening, may be finished off with half the feed the original "land pikes" would require.

With many Northern and Western breeders, the Essex is a more profitable pig than the Berkshire, because his nature leads him to take little exercise, so that all he eats goes to flesh and fat. Respiration, which, if rapid, produces fat greatly, is with him never accelerated by moving about, and, with plenty of feed, the sole burden of life is to digest it. This breed is pre-eminent among the black breeds, and excelled by none as fat-producers.

Poultry Yard.

How to Build a Poultry-House.

If we desire to build a house expressly for poultry, however, we may expend a hundred or a thousand dollars upon it, or more, as we please or have the means to beautify it. But the man who undertakes to raise fowls for profit, as well as pleasure, must avoid extravagance and mere outward show from the start.

We have always advocated the amplest space upon the ground; that is, the most generous dimensions we can afford for a fowl-house, in proportion to the number of fowls it is contemplated to keep confined therein in cold weather. This is the test. In summer time and early fall a great many more birds will keep in and around such a house advantageously than can be accommodated when we come to shut the doors, and confine them out of the wintry air and storms in a body.

To carry through the cold season 50 or 60 birds, composed of adults and the average proportion of young stock, the hen-house should be at least 40 by 20 feet upon the ground; or, say 30 by 25 feet. This gives but 750 to 800 feet of ground space for our four or five dozen fowls to move about on, day after day, and week after week, for four months or more annually. Twelve square feet each is not too much foot-space in which to keep fowls healthy and thrifty in confined limits. Yet less room can be got along with. If the house be but 30 by 20 feet, it will accommodate 50 or 60 birds very well.

The front of such house may be low down, say 4 to 5 feet high. Six sashes—15 feet wide in all—

placed side by side in the front of the roof, and the whole front below the eaves also glazed, will afford ample sun and light within. Build this upon 3 by 4 spruce joists for a frame. Set the corners and posts upon red cedar, chestnut or white oak sills for durability's sake. Raise a plank boarding, edgewise, all around outside, 18 inches high from the ground. Paint this with thin hot tar first, and then tank up and sod around the house to the upper side of this planking; tack laths upon the inside of the boarding, and rough plaster it; cover all the seams, outside, with 2 inch battens; shingle or close-batten your roof with 4 inch slabs, and set your door in the south end; leave the ground for the floor, and you have a cheap, durable, light, warm, comfortable poultier's fowl-house that will last many years, and cost you, all told, less than \$100. This should, of course, generally be done in the mild season. Yet we speak of it now because in the southern and southern-central parts of our country (and further north in mild seasons) there are many fowl houses constructed in winter, as the leisure of the builders may chance to favor.—*Poultry World*.

Answers to Enquirers.

"Is there any benefit for my fowls in 'cracked bone for poultry,' which I see advertised? My fowls have unlimited range on the farm."—*Pawtuxent*.

"N. B.—Please answer through *American Farmer*."

No. Fowls that have unlimited range pick up sufficient. The article referred to is intended for fowls kept yarded in close quarters.

"In your experience, which breed of chickens will lay the most eggs in a year, and can you give a picture of them in the *American Farmer*?"—*New Market (Md.) Farmer's Wife*.

The brown and white Leghorns lay the greatest number of eggs in a year. There is little difference between them—what there is, is in favor of the brown Leghorns. Will give cut in June number.

Brooklandville, Md.

G. O. BROWN.

DUST BATHS.—Cleanliness is important in fowl-houses, for experience shows that poultry are unfavorably affected by the emanations from filthy quarters, and besides, working in places where roosts and floors are covered with the droppings, is decidedly unpleasant. Dry earth, in the form of powder, scattered everywhere, will absorb the bad odors, giving a wholesome atmosphere to the hen house, and at the same time preserve the manure in the least offensive condition. Besides these purposes, a box of dry earth should be in a convenient corner of every fowl-house for the fowls to roll in. Dust from the highway is the most convenient. Replace the same by an equal quantity of good gravel, and the public will be the gainer.—*Live Stock Journal*.

Make your orchards your poultry yards. Fruit trees and poultry have an affinity for each other in more ways than one. The busy chicks find every bug, worm and egg that sooner or later work harm to the trees, and their droppings enrich and promote a healthy and vigorous growth.



The Rouen Duck.

This fine specimen of the duck tribe is of French origin, emanating from Rouen in Normandy. The ducks are fine layers, eggs varying somewhat in color. They are hardy and easily fattened, and with good feeding may be made to attain very good weight. At one of the late Poultry Exhibitions at Birmingham, England, a pair of Rouens were exhibited that weighed twenty-two pounds—such, however, is somewhat above the usual average weight. Mr. Wright, in his "Book of Poultry," says of them: "For farmers, and perhaps in the average of circumstances, we believe the Rouen is the most profitable breed."

Ducks can be successfully raised without having a pond or running stream of water for them to have access to. All that is necessary is a pan sunk in the earth, so that they may wash and "puddle." The Rouens seem to prefer this to a pond or stream. They should be furnished plenty of fresh drinking

water. Doubtless the best food for ducklings is scalded corn meal, mixed to a crumbly consistency—not mushy and sticky. Angle or earth worms they eat with avidity. When properly fed and cared for they are rapid growers, and are in good market condition at from two and a-half to three months old, and should weigh from seven to ten pounds the pair. The drake's summer plumage is the same as the ducks, and then the curl in the tail is the only (to a novice) distinction of sex. The ducklings, when first hatched, are of a brown color, with several small russet spots on their backs.

G. O. B.

Monteue Poultry Yards, Brooklandville, Md.

The Apiary.

Bee Notes for May.

This is the most important month of the year to the apiarian,—as during May the best swarms are cast, if natural swarming is allowed. Or if artificial swarms are made, the most successful are those made during this month. And the finest surplus honey is that secured during the two last weeks of May and two first of June. I gave last spring directions for making artificial swarms, and now, at the risk of being tedious to old bee-keepers, will give my manner of dealing with natural ones. I have never found that beating pans, &c., had any effect in causing swarms to settle; and I suppose the custom arose from a natural desire to do something in a position where there was a feeling of perfect helplessness. The best plan is to let the swarm alone, and as the queen is heavy with eggs, and the bees with honey, they will usually settle on some low tree near the hive. If they should fly very high and seem disposed to leave, throwing sand and fine gravel among them will confuse them, and generally cause them to settle. As soon as they have settled no time should be lost in getting them into the hive they are to stay in, as they are much more gentle when full of honey, as they always are when they leave the parent hive, than after they have digested it, which they do in an hour or two.

The hive into which you wish to put the swarm should be put under the tree on which the bees have settled, with a white cloth spread

under it. If the swarm is low down and on a small branch, cut the branch off with a knife or pair of pruning shears, and holding it close in front of the hive shake the bees off so that they will fall on the cloth, and in a few minutes they will all go in. But if the swarm cluster high up in the tree, or on too large a branch to cut off without jarring the bees too much, hold a box or basket close under the cluster, and jar the bees into it by striking very sharply on the bough near the swarm. Carry them quickly to the hive and pour them in front of it. As soon as the bees are in the hive, it should be carried to its permanent stand; for if this is put off until evening, as is often done, the bees will mark their location when going out to work, and many will be lost when the hive is moved. Be careful to shade the hive in which a swarm has just been put. Many swarms leave every season, and are lost from their hives being so hot that they can't stay in them. If a long rainy spell set in the day after a swarm is hived, the bees should be fed, or much time will be lost before getting their combs started.

Howard C., Md. D. M. WORTHINGTON.

SWIMMING A HORSE.—When swimming a horse never touch the bridle, as a horse is easily drowned when checked or otherwise interfered with about the head. Sit well back and guide the horse with the hand, gently slapping him on either side as may be required; thus a horse will swim a mile or more with a full-grown man upon his back, and suffer but little. A few encouraging words gently spoken will give the horse confidence to perform the labor required of him.

Work for the Month—May.

The Corn Crop.—Whatever area you put in this crop do not sacrifice thoroughness to breadth. The temptations are very great in the view of the condition of the market to spread out the crop, though the wiser course would seem to be to make an increased yield on a less space. Let the preparation in advance of planting be thoroughly attended to, not sparing any labor to attain a fine tilth, harrowing over and over again if necessary to accomplish it. Afterwards, keep the ground mellow with the cultivators, and the crop clean from the moment it is high enough to work. The frequent stirring of the soil is not only designed to destroy the weeds and grass, but also to open the surface to the influences of the atmosphere, to admit air, moisture and heat to the roots of the plants; an object which cannot but be defeated when the ground is caked, and the air prevented from circulating in the porous soil. See elsewhere in this issue two communications well worth referring to.

Potatoes require thorough pulverization of the soil, the land to be in good heart, and an abundance of vegetable matter to secure that coolness which these tubers seem to prefer. Many cultivators delay by preference, to plant in June in order to escape the droughts likely to prevail when the potatoes are making if planted earlier. In cultivation keep the ground light, and eradicate every weed,—and that the rains falling may be absorbed and not run off, be careful to leave the hills flat or even hollow on the top. A dusting of plaster over the vines occasionally is an advantage. The inorganic fertilizers seem especially adapted to the wants of this crop—of these especially, ashes, bone-meal and super-phosphates. Lime, plaster and salt are also favorite applications, and as the potato contains a large proportion of potash in its composition, the use of the salt of potash is recommended. Avoid the application of rank, unrotted, green manures, they producing a tendency to disease and the formation of misshaped tubery.

Root Crops.—Besides the saving of hay, the preservation of health is an advantage in the production of these crops. A moderate supply of them will go a long way towards securing the health through the winter of animals of every kind, to whom they are fed. The immense quantity which can be raised upon an acre by proper cultivation and care, and the saving they will secure of other feed, is of itself an argument for their production. See last month's note for directions as to seed, &c.

Millet and Hungarian.—Where grass is short these are excellent substitutes, and being annuals are raised at little expense and trouble. The German millet is most in favor now. The hay is relished by all kinds of stock, and the quantity there can be raised on an acre is prodigious. See elsewhere the report of Dr. Woods, of Virginia. Millet may be sown from now up to the 1st of July,—a bushel of seed to the acre. Unless cut before the seed matures, the straw is woody and hard. Hungarian, like millet, needs a rich soil. The same quantity of seed is sufficient for an acre.

Fodder Corn.—Early sowings of this are preferable when it is to be cured, but that to be

fed green may be sown in succession every two weeks. On rich land the quantity of fodder it produces is very great. Sow in drills two and a half to three feet apart, and let the stalks stand ten to twelve to the foot. Cut when in full tassel and put in large stocks to cure; pile *thickly* against the fences.

Tobacco.—The condition of the plants will decide the time of setting out. Be watchful to keep the beds free from grass, and top-dress frequently to force on the plant. The ground already plowed should be carefully worked, not to disturb the grass plowed under.

Pumpkins.—Do not overlook these in your preparations for winter feeding. They can be readily grown in with corn, and are very useful for milk cows. Put in as early as convenient; have the hills rich, and look out for the bugs.

German Millet.

The most enthusiastic cultivator of this forage plant that we have yet met is Dr. Jno. R. Woods, of Albemarle Co., Va., from whom we had lately the pleasure of a visit,—it being the first time for many years that we have seen our old friend and correspondent. If a man so robust of thought, and universally well equipped in agricultural subjects, could be suspected of such a thing, we should say that just now it is his "hobby." The Doctor intends putting in a crop on his tobacco land, plowing down his timothy sod and sowing it, and next winter to winter his horses, oxen, sheep, milk cows, and fattening cattle, on this wonderful plant. Having referred us to his account of this millet published in a recent issue of the *Southern Planter*, we annex some extracts from it.

We find that the Doctor is as devoted as ever to improved stock, and from the animation with which he refers to his short-horns and sheep and swine, he is doubtless still well in the advance, as of old, amongst the breeders of the Old Dominion. We are pleased to add that he kindly volunteered to occasionally hereafter give us a "squib" on current topics for the *Farmer*, and those who know how thoroughly posted he is can readily understand that his squibs are equal to most men's heavy artillery. Of the millet he says:

The repeated failure to get a stand of clover—timothy seldom making a remunerative crop on upland—induced me to seek for something else as a forage crop; and while on a short excursion to the green-sward region of Kentucky, in the fall of 1875, (I will not use that misnomer, blue grass being a different variety of poa) I procured information which led me to purchase a few bushels of the German and English millet. The first I sowed the middle of May on about six acres, one bushel to the acre, half creek flat, half upland—all of which had been cultivated in tobacco the previous year. It was ready to be mowed for hay in ninety days. The last I sowed on upland adjoining, the same quantity to the

acre, and it was ready for mowing in sixty days. I cut this in full bloom. It made a fair crop; much less than the German did. When the German was ready for mowing, that is in full bloom, there were continuous rains and damp cloudy weather, which induced me to let it stand until the seed were matured. Though not tested by the scales, I am sure there were at least four tons to the acre, producing 225 bushels of seed. The straw, after threshing, I took good care of, and am feeding it to horses, colts, work-oxen, calves and sheep, which all partake of with as much avidity as the nicest hay or fodder, and are doing well on it.

I would suggest that farmers put a part of their good corn land in German millet instead of wheat and oats, neither of which are remunerative crops—the last having been a failure for several years. Land which produced five bushels of corn to the acre, by the application of a suitable fertilizer, I am confident, if well prepared, would produce a crop of German millet worth forty dollars per acre. Where one wishes to save seed, I understand it is best to be sown in drills, and a less quantity to the acre. The amount raised by broadcast sowing from six acres, at the price which they can be sold, shows the value of the crop for this purpose if not wanted for forage of the best quality.

Time for Sowing Seeds.

The following table will be found convenient to farmers and gardeners, as to the time of sowing, and the quantity of seeds to sow :

- 60. Red Clover, sown in March or April, 6 to 10 lbs. per acre.
- 45. Timothy, March or April, and August and September, $\frac{1}{2}$ to $\frac{1}{4}$ bushel.
- 14. Red-top, April and May, and August and September, $\frac{1}{2}$ to 1 bushel.
- 14. Kentucky blue-grass, April and May, and August and September, $\frac{1}{2}$ to $\frac{1}{4}$ bushel.
- 50. Hungarian grass, May and June, 1 to $\frac{1}{2}$ bushel.
- 50. Millett, May and June, 1 to $\frac{1}{2}$ bushels.
- 45. Sugar Cane seed, May and June, 2 quarts.
- 56. Flaxseed, April, May and June, 1 to 3 bushels.
- 56. Corn, April, May and June, 8 to 10 quarts.
- 56. Rye, March and April, and September and October, 1 to 2 bushels.
- 60. Wheat, March and April, and August, September and October, 1 to 2 bushels.
- 48. Barley, March, April and May, and August and September, $\frac{1}{2}$ to 2 bush.
- 32. Oats, March, April and May, 2 to 3 bush.
- 52. Buckwheat, June and July, $\frac{1}{2}$ to $\frac{1}{4}$ bushel.
- 60. Potatoes, March, April, May and June, 5 to 15 bushels.
- 55. Sweet do., May and June.
- Beets, April, May and June, 4 to 5 lbs.
- Carrots, April, May and June, 3 to 4 lbs.
- 55. Turnips, March, April, May, and August and September, 1 lb.
- Parsnips, March, April, May and June, 2 to 3 lbs.
- Onions, March and April, 4 to 6 lbs.

- 60. White Beans, May and June, $\frac{1}{2}$ to 2 bush.
 - 60. Peas, March and April, $\frac{1}{2}$ to $\frac{1}{4}$ bushels.
- The figures in front indicate the weight per bushel.

Election for Trustees of the Maryland Agricultural College.

The annual meeting of the stockholders of this institution was held April 11th at Guy's Hotel. The attendance was much larger than usual, and it was evident that a more than ordinary interest was felt in the result.

Mr. Otho H. Williams was called to the chair, and Mr. Gilmor Hoffman was appointed secretary. A committee of three, consisting of Messrs. John Merryman of Baltimore, A. Bowie Davis of Montgomery, and J. D. Warfield of Howard, was appointed for the verification of proxies, and, after a canvass, report was made that about six thousand shares of the capital stock were represented.

Prof. Warfield asked permission on behalf of the President of the college to make a statement, there being no requirement by the terms of the charter for a report to the stockholders. He said an active canvass had been made throughout the State and in the city of Baltimore against the present administration, because agriculture had not been taught. That administration in everything it had done had only obeyed the positive instructions received from the trustees. It was directed to provide for the payment of the debt, first of all, and above all. This had been, practically, accomplished. The balance of debt now remaining was more than counterbalanced by the moneys due to the college. That administration, he would further say, had made an effectual reform in the condition of the institution; where it found disorder it instituted discipline; where there was filth there is now cleanliness. It had paid the debt of \$13,000 bequeathed to it, and was now to be turned down because agricultural experiments had not been prosecuted without money. If the administration was sustained, it was the intention of President Parker to give attention to such experiments. It had been said that because the president was not an agriculturist that agriculture would not be taught. He contended that such was not the case; that they had done what their money would permit; there were classes in practical agriculture, and there had been lectures on the same subject; and in the future, under the changed condition, financially, of the college, it was intended to elevate and enlarge the agricultural features.

The number of the special students was not large, but they had been large enough to support almost entirely the institution, while the State and United States appropriations were devoted to the payment of its debts.

President Parker confirmed Prof. Warfield's statements, and said, in effect, that he appreciated, even as a teacher of mathematics, the importance of giving a distinctive agricultural character to the college, and that it would be hereafter his disposition to do this, under such instructions as he might receive from the board, just as in the past he had followed their instructions in freeing it from the debt resting against it.

Mr. J. Howard McHenry said he would like to hear something specific as to the condition of

the college. He had been opposed to the present management, but if it had succeeded in clearing off the debt,—a thing, he believed, no other direction had ever accomplished,—and if it was now prepared to so alter, as stated, the main objects of its policy, he would not insist upon a change of administration, which would put them for a time at sea.

Prof. Warfield responded that there were 68 students "enrolled," and that of this number only ten or eleven were preparing for West Point and the Naval Academy. There are 57 students present. The revenue from the special students nearly runs the college. The debt remaining unpaid is about \$700, and against that there is due the institution for tuition fees some \$1,200.

Mr. A. Bowie Davis said it was well known that he had not favored the Board which had had control for the past two years, but that he frankly acknowledged that his interview here to day with President Parker had but confirmed his former estimate of that gentleman's executive ability; and in view of the statement made of the total extinguishment of the indebtedness, and of the disposition and resolve to so model the future of the college as to make it conform to the needs of agriculture of our day, that he conceived it to be the part of wisdom, as well as of magnanimity, to vote for that board, in order that no essential change might be made in its composition, and that the same gentlemen should be charged with the perfecting of the work, in which, in one respect at least, justice compelled him to say they had, with the aid of Captain Parker, been successful beyond his expectation.

Mr. Chas. B. Calvert said he spoke as a stockholder and as a graduate of the college. He denied that he had canvassed for proxies, and more emphatically even that he had made this canvass, as was alleged, in the interest of an individual. He at one time held the view that with a mathematician at the head of the college agriculture would be taught, but he had abandoned that idea. He had suggested agricultural experiments and analysis of soils, but his recommendations were met by silence. The scheme for wiping out the indebtedness was arranged before the faculty was elected.

Agriculture should be the prominent feature of this college, and not the training of students for West Point or the Naval Academy. The chair of mathematics filled by the president cost \$3,000, with assistants at \$1,100 and \$780, while the professor of agriculture got but \$600 and his board, and the professor of chemistry the same. He charged that the December report giving a flourishing account of the college was given out for publication although a quorum of the trustees was not present, and no meeting of the board had in truth been held at all.

Other rather roseate-tinted reports had been given to the press, but the fact still stood out prominent that the mathematics taught cost about \$5,000 a year, and agriculture only \$600; and that very important branch of science, chemistry, far more important than mathematics to the farmer, also cost only \$600. It was on this issue he had made the contest, though he had not been canvassing for votes, as the dates of the proxies he held would show.

A motion to take a ballot was adopted, and the election was declared. The following named gentlemen, all of whom, except Mr. Sands, are members of the late board, were declared elected: Gen. E. L. F. Hardcastle, Talbot county; Jas. T. Earle, Queen Anne's; Ezra Whitman, Baltimore city; Allen Dodge, District of Columbia; W. H. Tuck, Annapolis; John F. Lee, Prince George's; and Wm. B. Sands, editor *American Farmer*.

The minority ticket was as follows: Chas. B. Calvert and James Nichols, Prince George's; Jno. Merryman and C. Shipley, Baltimore; Jno. F. Hodges, Anne Arundel; Edward Wilkins, Kent; John A. Baker, District of Columbia. Most of the successful ticket received 3,848 votes, against 2,078 for the other.

After the result of the ballot was announced, Mr. J. Howard McHenry offered the following resolution, which was unanimously adopted:

"Resolved, That the Board of Trustees be requested to make instruction in practical and experimental agriculture the leading feature in the educational system, at the earliest possible moment."

The meeting then adjourned.

The Dairy.

Holstein Cattle for the Dairy.

At the meeting in December of the New York State Dairymen's Association, Gerritt S. Miller, Esq., of Peterboro, N. Y., read the following paper on the Holsteins for the dairy:

The cattle known as Holsteins in this country are those large, improved, black and white cattle imported from the provinces of North Holland, Holstein or intermediate territory, and such as can be traced in direct line, on the side of both sire and dam, to animals of undoubted purity of blood of such importations.

In calling the attention of American Dairymen to the merits of Holstein cattle, it will be well to refer briefly to their history. Holland has been noted for her dairy products during many a century. As to the condition of Holland in the seventeenth century, Motley says:

"On that scrap of solid ground, rescued by human energy from the ocean, were the most fertile pastures in the world. On these pastures grazed the most famous cattle in the world. An ox often weighed more than two thousand pounds. The cows produced two and three calves at a time, and the sheep four and five lambs. In a single village four thousand kine were counted. Butter and cheese were exported to the annual value of a million dollars; salted provisions to an incredible extent. The farmers were industrious, thriving and independent."

Henry Coleman, in his "European Agriculture," published in 1848, says: "The Dutch cows have been a long time celebrated for their abundance of milk. They are generally of a black and white color. In some cases they are milked three times a day. * * * * They remain in pasture all summer where they are milked, but in winter they make a part of the family, and, in truth, live in the common

eating room of the family, it being a part of the main house."

Charles L. Flint, in his "Milch Cows and Dairy Farming," published in 1858, says: "The attention of farmers in Holland is, at the present time, devoted especially to the dairy and the manufacture of butter and cheese. They support themselves to a considerable extent upon this branch of farming, and hence it is held in the highest respect and carried to a greater degree of perfection, perhaps, than in any other part of the world. They are especially particular in the breeding, keeping, and care of milch cows, as on them very much of their success depends."

Prof. Geo. H. Cook, writing in 1871, says that while traveling in Holland, he heard of a dairy of twenty-six cows in the Beemster where the daily average of milk was 18 1/2 quarts for six months, and another at Haarlem, where the best cow gave 17.8 quarts per day for forty-four weeks. He further says that "there were in 1864, 1,333,887 cattle in Holland, of which 943,214 were cows; and these numbers are not so large as they have been in some other year; 32,000,000 pounds of butter and 61,000,000 pounds of cheese were exported from the country in 1864. The population of New York is about the same as that of Holland. The whole number of cattle of all sorts in that State in 1870, was estimated at 702,000. The whole amount of butter exported from the United States, from June, 1869, to June, 1870, was 2,039,488 pounds, and of cheese, for the same time, was 47,296,323 pounds." These few references show that the Holstein is justly entitled to her high reputation as a dairy cow.

It is of great importance that we, as dairymen, should select not only the best breed but the breed that is best for our use. Now let us see how the Holstein sustains her reputation in America. We all know of the good reputation of the old Dutch cow, brought to this State and other parts of our country, by the early Dutch settlers. The good influence of that early importation is still felt in our leading dairy districts. Until within the past seven or eight years, the importation of Holsteins was carried on by two or three individuals, but now importers and importations are quite numerous.

There are recorded in the two volumes of the Holstein Herd Book, 405 animals; of these 171 are males and 234 are females. Most of the females young; too young to make any milk records, hence our records are mostly from imported cows. Let us look at the number of imported cows, entered in the Herd Book, and see what they have accomplished at the pail, in this country. The total number is about ninety; of these, several are heifers. I have been able to get returns from only five importations, numbering seventeen cows. Out of this small number three have produced 70 or more pounds of milk in one day, (the largest amount being 76 pounds 5 ounces,) and ten have produced 60 or more pounds per day per cow. Of the remaining seventy-three cows, I have no authentic record, but have heard many of them spoken of as being unusually large milkers (yielding from 60 to 70 pounds of milk daily.) This shows a very large per cent. of bountiful milkers; and indicates

that the Holstein will fully sustain her high reputation in our American dairies. Holstein milk is of excellent quality for dairy purposes and family use. It produces butter of superior quality and flavor, and its keeping qualities are said to be remarkably good. I have reports of cows producing 13 pounds to 17 pounds 14 ounces of butter in seven days, and heifers two to three years old, producing 10 pounds to 12 1/2 pounds in the same time. The chemical analysis of the milk, as made by Prof. A. A. Hayes, and Dr. T. C. Jackson, of Boston, and more recently by Prof. Arnold, shows it to be rich in casein and butter, and excellent for general use.

Dairymen should strive to obtain the cows that will yield the greatest amount of milk, butter, cheese and beef for every pound of food consumed. To decide this important question, it is not sufficient to estimate the amount of food consumed, allowing a certain number of pounds for every one hundred pounds of live weight; we must decide it by actual experiment. The number of experiments with thoroughbred cattle at my command is quite small, but they are valuable, as far as they go.

Professor Lehmann, in charge of an experimental agricultural station, at Pommeitz, selected cows from both the Short-horn and Holland races that had passed their sixth year, but were not so old that their age affected the flow of milk. The experiment of milking commenced July 31st, 1866, and terminated July 30th, 1867, (365 days,) during which time there was yielded by four Short-horns 27,204 pounds of milk, or an average of 6,801 pounds per cow, while four Hollanders yielded 32,136 pounds, or an average of 8,034 pounds per cow. Highest yield by Short-horn 7,643 pounds; highest yield by Hollander 9,411 pounds. The same food, keeping, care and surroundings, which in the Short-horn produced 100 pounds of milk produced 118 four-tenths pounds in the Hollanders, or fully 18 per cent. in favor of the latter breed as milk producers.

At the Agricultural Academy, Eldena, many experiments were made in feeding and milking cows, and very precise accounts were kept of the product of every cow, as well as the expense of keeping her: and it was found that three Ayrshire cows averaged 2.247 quarts of milk per cow, while twenty-two Holland cows averaged 4.437 quarts per cow. Highest yield by Ayrshire 2.811 quarts; highest yield of Hollander 5.677 quarts. The Hollanders consumed about five pounds of the equivalent of hay for every quart of milk produced; the Ayrshire nine pounds of hay for one quart of milk. Another set of experiments, conducted by Villeroy, resulted in showing that 100 pounds of hay produced, in Hollanders, 28.92 quarts of milk; in Devons 19.13 quarts and in Herefords 15.97 quarts.

Baron Ockel, in Frankenfelde, made a comparative experiment with Ayrshires and Hollanders; the average weight of the Ayrshires being 806 pounds, and that of the Hollanders 1,016. The experiment showed that the "Ayrshires consumed three and three-tenths pounds of hay for every 100 pounds of live weight, while the Hollanders consumed two and eight-tenths pounds. Of the amount of food consumed, one-sixtieth of their live weight only was required to keep the

Hollanders in their normal state, while it required one-fiftieth of the live weight, in food of hay equivalents, to keep the Ayrshires in their normal condition."

Further careful experiments of Baron Ockel, show that heavy cows of the same breed consume relatively less food than the lighter ones, and at the same time yield a greater return for it. Professors Furstemburgh and Rohde, of the Royal Agricultural Academy, at Eldena, Prussia, say of the Holland cows: "We have received from no other race an equal quantity of milk, with the same feed, as years of observation in the cow-stable of the Academy at Eldena have shown."

* * * In 1865 different breeds were kept here, viz: Milch cows of Toudern and Breitenburg, in Schleswig-Holstein, of Ayrshires in Scotland, and of Holland. The yield of milk of these breeds, for the year, was:

1st. Four Toudern cows gave 9,337 quarts, or an average of 2,334 quarts per cow. The largest milker gave 2,345 quarts, the smallest 2,020 quarts.

2d. Three Breitenburg cows gave 8,594 quarts, or an average of 2,864½ quarts. The largest milker gave 2,946 quarts, the smallest 2,820 quarts.

3d. Three Ayrshire cows gave 5,386 quarts, or an average of 1,795½ quarts. The largest milker gave 2,249 quarts, the smallest 1,415 quarts.

4th. Twenty-two Holland cows gave 78,100 quarts, or an average of 3,550 quarts. The largest milker gave 6,142 quarts, the smallest 2,526 quarts. Nine of the Holland cows stood at one crib, while ten of the smaller stood at another of equal size. The fodder, however, was divided the same in each. The proportion is as nine to ten, or when the smaller cows ate 45 pounds of hay the larger ones ate 50 pounds. From the quantity of milk given the Holland cows used a trifle over 5 pounds worth of hay to produce one quart of milk; the Breitenburgs used 6½ pounds of hay; the Touderns used 7 pounds of hay, and the Ayrshires 9 pounds of hay. By these results it cannot remain doubtful which breed is preferable.

Carefully kept records of the yields of herds, continued through successive years, make a stronger argument for or against the individual breeds than I am able to offer.

INTERESTING DAIRY STATISTICS—In the convention of the Butter and Cheese Association, held last month at Chicago, Mr. O. S. Bliss, of Vermont, made an address on "the dairy interest," in which the following statistics were embodied:

The number of cows in the United States is 8,935,332. The percentage of milk for each State, according to the milk stated in the four States producing most largely, is: New York, 126.2; Vermont, 119.2; Massachusetts, 117.3; Connecticut, 101.4; in Iowa, Wisconsin, Missouri and Illinois the percentage is respectively, 76.2, 77.6, 33.3 and 63.2. In 1876, the milk production aggregated 235,600,599 gallons; the cheese produced in the same year amounted to 5,342,915 pounds, and 514,062,685 pounds of butter were made. Mr. Bliss added the startling statement that the number of cows had decreased as in proportion to the number of humans in the United States, since 1860, for in that year it was one to every 3.6 people, whereas now it is but as one to each 4.3 people.

Horticulture.

The Maryland Horticultural Society.

The April meeting and exhibition was held in the handsome Concert Hall of the Academy of Music, on the evening of the 19th. The steadily increasing attendance on these occasions bears testimony to the popular appreciation of the work the Society is doing. The crowd at this meeting was so great, indeed, that the usual meeting for business and discussion had to be limited to the merest routine, although there were a number of gentlemen present who were prepared to speak on the Rhododendron topic assigned to the evening, as well as a paper in the hands of the Secretary on the same subject from a well-known importer of these plants.

The number of depositors was considerably larger than usual. James Pentland had a very effective table of Ferns, Palms, Camellias, &c.; Robert J. Halliday, Azaleas and a mixed collection; Wm. Fraser had some very interesting as well as well-grown plants from his new conservatory at Patterson Park; Andrew Patterson had a choice assortment of Roses, also Verbenas; the veteran John Feast had, as usual, an unique collection, including an *Inga*, a plant never shown here before, as we believe, the floral appendages consisting of brilliant crimson balls, enveloped by fibrous fringes, and a Camellia with some 200 flowers; Archibald Brackenridge had a handsome table filled with Ferns, Geraniums, Begonias, &c., and some miniature designs of ribbon beds; W. F. Massey entered Geraniums, Verbenas, &c.; John Edw. Feast showed Tulips, Lillies, Roses, &c.; Chas. Bucher & Bro., Begonias, &c.

Of the amateurs, Chas. A. Oakford had a table of very handsome Azaleas of large size and profuse bloom; Mrs. Isabella Brown had Cinerarias; W. H. Perot entered Azaleas, including some specimens of the *A. mollis*, Ferns, Geraniums, &c.; Ernest Hoen, Geraniums, Cinerarias, &c.

Of cut-flowers and designs the offerings were numerous and of great excellence. Baskets were deposited by Jas. Pentland, Jno. Edw. Feast, R. W. L. Rasin, G. V. Smith, W. F. Massey; a pretty arrangement of flowers in glass dishes for table decoration by John Edw. Feast; a stand of superb rose-buds by Thos. Fairley; cut-roses by Robert Patterson; the same by Andrew Patterson; a pretty bouquet of leaves, also seedling Carnations, by A. L. Crosby; blooms of Magnolias from A. Hoen and Wm. Fowler, of Clifton. Pansies were shown by Peter Henderson, of New York; C. Bucher & Bro.; Chas. Kemp, Jr.; E. Hoen; James Pentland. Some remarkable fine Mushrooms were entered by N. F. Flitton, gardener at Gov. Carroll's.

Messrs. J. Mowton Saunders, Wm. D. Brackenridge and Wm. Fraser were the judges.

Awards.

The following were made:

Best 12 named varieties Azalea Indica \$6. W. H. Perot; best 12 distinct Roses in pots, \$4; best

12 cut blooms of Roses, \$3, and best 12 varieties of Verbenas in pots, \$2, Andrew Patterson; best 24 cut blooms of Pansies, \$2, E. Hoen; best 6 varieties Cinerarias, \$2, Mrs. Isabella Brown; best 12 Zonal Geraniums, \$3, E. Hoen; best 6 double-flowered do., \$3, A. Brackenridge; best 6 variegated foliage do., \$3, W. H. Perot; best 6 Ferns, \$3, James Pentland; best collection Greenhouse Plants, one-half in bloom, \$5, James Pentland; best basket of cut flowers, \$2, W. F. Massey.

Special Commendation

was given by the Committee to a number of deposits not coming under the schedule, as follows: To James Pentland, for a stand of cut-flowers, which deserved the premium, except that it was not strictly a basket as required by the schedule; to A. Hoen, for a double seedling Magnolia, an acquisition; to Jno. Edw. Feast, for a table design, in pieces; to A. L. Crosby, for Seedling Carnations and a bouquet of leaves; to John Feast for a Camellia in unusually profuse bloom; to Wm. Frazer, for a really fine collection from Patterson Park Conservatory; to Thos. Fairly, for a design composed of Rose buds entirely; to N. F. Flitton, gardener to Gov. Carroll, for fine specimens of Mushrooms.

Situations for Peach Orchards—Remedies for Frost.

Messrs. Editors American Farmer:

The peach being the most delicious of all our fruits, those favorably situated for its cultivation should not neglect the means of securing abundant crops. There are many sections of our country in the Middle States and further South in which this fruit is very uncertain and liable to failure, in consequence of being winter-killed or destroyed by the vernal frosts; and there are situations in the immediate vicinity of such places in which it seldom or never fails.

As an instance of bad location, our main orchard is on the slope of a hill, 49 feet, by actual measurement, above the creek valley. This altitude we supposed would ensure the safety of the crops, but we have found it otherwise; although, in favorable seasons, good crops have been produced. For the last four years, however, including the present, we have found but little or no fruit on the trees,—it having been either killed in the bud, or when in full bloom, by spring frosts. The tops of the highest trees this spring only have bloom; balance killed by the extreme cold of the 4th and 5th of January last. This is discouraging, but we have a remedy. We find that trees planted on the same hill, further up, and on ground only 21 feet higher, by measurement, are exempt from casualties of this sort, having borne largely during the last four unpropitious seasons; so that seventy feet above the valley is sufficient. This hint is sufficient for us, and we shall in the future eschew valleys and low hills adjacent for peach culture, as they are always colder in winter than airy heights and more exposed situations, and are almost sure to disappoint the culturist. Besides the favorable situation just named, we have, on hills nearly surrounded by woods, small orchards that never fail, and insects here are much less injurious.

Another expedient might be practiced by amateurs where the location is unfavorable. We found, a few days ago, a long branch of a peach tree that trailed on the ground. It was full of fresh buds and blossoms, and all alive. This is in a low, frosty place, and the protection afforded by lying on the ground *without shelter*, so far, has saved the fruit.

The peach may be trained *fan-shaped* against walls, where it can be easily protected by nets or otherwise; and trees may be so trained as to have only two or a few long limbs stretching away near the ground, where they may be laid at the approach of extreme cold, and pinned to the ground by small forks of bushes, or limbs cut and sharpened for that purpose. A slight covering of pine brush or any coarse litter may be spread on them, to remain until spring, and replaced at every prospect of frost. A good plan to secure cheap sheltering material, for this and other purposes, where there is no pine, is to cut oak brush in the month of August. If cut at that time the leaves will remain intact and tight until spring, and afford excellent shelter. They may be then let up and placed on forked stakes 3 or 4 feet high, padded at the bearings to prevent chafing. This will give sun and light, and promote growth and fruitage and security from high winds.

Smoke to protect orchards is a common appliance in France and Germany. We have good authority for its use in this country. Take gas tar, sawdust and old straw, mix them in heaps at proper places, with small heaps here and there in the orchard. This mixture remains *inflammable*, in spite of all kinds of weather, and, when ignited just when frost is apprehended, produce clouds of dense black smoke that hover about the tree-tops for several hours, affording complete protection. J. FITZ.

Keswick Depot, Albemarle Co., Va.

The Garden.

The winter being over and the spring advancing, the world is exercised about gardening. The rich and the poor are actuated by the same spirit. For the one it is a luxury,—for the other it is a necessity. By those who can afford it, much taste and art are applied to it. Much time is given to flowers, shrubbery and esculents. You will generally find where there is a will there is a way of making a show, and the excitement quickly spreads through the whole neighborhood and country. No wonder the human mind becomes tired of the solid and substantial, and is carried away by the gay and fanciful. Gardening is a science equally delightful, and participated in by gentlemen and ladies. Many an hour is stolen away from weighty matters and applied to floriculture and horticulture. Can anything be more lovely than the sight of the flowers in a tasty *parterre*? We almost fancy that we can look through nature up to nature's God. Descending from the beautiful to the useful, we are struck with the remark that a good garden goes half way towards the supply of the edibles of a family, and the other half towards its health. It is given up that all solid food without vegetables is expensive and unhealthy. The use of vegetables cures some very disagree-

ble diseases. Besides vegetables, there are many small fruits that are cultivated in gardens that are healthy and luxurious. Market gardening is supported by the cities; they are useful and indispensable. If this supply was cut off from the cities there would be a great lamentation. Next to the farmer is the gardener. Cities have no greater friends than they. Success to farming, gardening and floriculture! I read a toast once: "Woman—the finest flower in nature's garden."

West Va.

c.

The Vineyard.

The Grape and Wine Question.

Messrs. Editors *American Farmer* :

My views on this subject published in different journals are based on a thorough knowledge of the subject, and a life-long experience in the business, and inspired by the desire to use that knowledge not exclusively for my own benefit, but also, as far as it is in my power, for the benefit of the inhabitants of this country.

To my regret I cannot boast of having so far succeeded satisfactorily in that endeavor. It cannot be denied that the Virginians generally, in their well-known great love for their country, are inclined to trust rather a man who, knowing how to flatter that love, tells them that there was no country in the world which could compete with Virginia in anything; that there was more gold in Virginia than in the Black Hills; more diamonds than in Sanama; that half of the wealthy population of Great Britain was anxious to emigrate to Virginia; that a sherry wine could be made in that State, and many more extravagances, than a sober, upright, straight-forward man, who, though acknowledging the advantages Virginia offers, speaks nothing but the truth. I do not fear opposition, but it is rather difficult and unpleasant to discuss the subject in question with men who go so far to defend in all earnestness the absurd idea that sherry wine could be made in Virginia, and, what is downright nonsense, of the Concord grape. Yes, sherry wine can be made in Virginia and anywhere in the world like that manufactured in Montpellier, Certe, Flamburg and other places, oftentimes without a drop of grape juice, but this is no business for grape-growers, and those of this country would do decidedly better to keep out of that way, if they want to establish that reputation for their wines which is absolutely needed to find a sure and ready market, and to make this the great wine country to which nature has adapted it so beautifully. I confess that I began to feel to some degree discouraged, and was about to retire on my mountain place, and, confining myself to tend exclusively to my own business, to stop teaching altogether. But that intention directly flew away after my having glanced over the numbers of your *American Farmer* you were kind enough to send me, and found to my greatest satisfaction that I was no longer isolated and solitary in my views, but that I had now allies in Gen. L. Giddings and others, who are discussing the question with ability and judgment.

I do not say that I agree in all points with the views of these gentlemen, but certainly in many of the most essential ones, and with the greatest pleasure I take now my pen to state where we agree and where not.

Before anything else I agree with Gen. Giddings that it is an error to try to imitate European wines; that is, to make a port, claret, sherry, &c., in this country. The wine of every country in Europe has its peculiar character, which in most cases is so distinctly pronounced that it is not difficult to know them from each other. Why should we then try to make here a port, claret or sherry, or any other European wine, instead of making a Virginia or Maryland wine, as good as it can be produced, no matter if it has a similarity with any other wine in the world or not? I am agreeably surprised to see Gen. Giddings express that view, which I thought nobody besides myself was maintaining; it shows how far he is looking in the matter. But I am still more pleased with his allusion to the very thing which gives the means in our hands to make a wine distinct in character from any other wine, and that is the flavor peculiar to our grapes, which is excellent in many varieties, though rather too much pronounced in some of them, as the Ives, &c. Even the flavor of these may have and find admirers, but I do not expect that I will ever belong to them.

Gallizing.

Gen. Giddings is treating the subject of gallizing so ably and exhaustingly, and showing the fatal consequences the adoption of that unsound doctrine must have on the success of the grape and wine interest of this country so evidently, that I need not say more than declare myself fully in accord with his views. But I go still farther than Gen. Giddings, condemning not only gallizing, but also the use of sugar or anything besides the juice of grapes in manufacturing wine. There is and will be for some time to come, particularly in this country, a profitable market for gallized and sugared wine; but to supply that market we need not to go to the trouble and expense of planting vineyards; the juice of several, with us wild-growing fruits, and particularly the blackberry, answers that purpose fully. It is just the greatest glory of the grape that this is the only fruit of which a wine can be made without addition of anything, that keeps for centuries, and is as palatable as refreshing and invigorating. Sugar improves the juices of all fruits but the grape by covering their deficiencies, while it injures the juice of the grape by covering its delicacies. The vinous acid if in a suitable proportion is just the thing which produces that freshness so highly esteemed in wine, and the beneficial influence its moderate use exerts upon body and soul. Sugar neutralizes the vinous acid, and nothing is left but a dull, insipid beverage, which can suit only a person whose taste was spoiled by sugar, candy and brandy, and who is asking not more of a wine but that it is sweet and intoxicating.

I agree with Gen. Giddings and Mr. Heineken that but few of our grapes will make a wine strong enough to keep unfortified by sugar or spirit, but a few of them are, and these few are all we need, and the only ones worth cultivating

for wine intended for the market, and the balance ought to be discarded. I know only of three varieties which answer the requirements made on No. 1 wine grapes, and those are the Catawba, the only good grape for white wine we have, (the merits of the Herbemont not being sufficiently proved yet) the Norton's Virginia and the Clinton. But these few varieties are very sensitive as to locality and soil, and only those localities where they grow and ripen to perfection can be called No. 1. The Catawba is badly rotting and not very productive in most localities, while here on the slopes of the Blue Ridge mountains it is just as healthy, hardy and productive as any. The Norton's Virginia can be raised nowhere to perfection but on our light and rich mountain soil. Of the Clinton, Mr. A. Jackson says in the February No. of the *Farmer* that it makes good wine with an excess of gallizing, which means that it don't ripen thoroughly in his locality; with us the Clinton ripens to perfection, and makes a wine nearly as good as Norton's, without gallizing. The result of that consideration is, that the slopes of the Blue Ridge mountains offer better localities for the cultivation of grapes for the purpose of making wine than the lower country. It is really astonishing how great the difference is in the quality of the grapes grown about here and those grown only ten miles below. I did not recognize the Clinton when I first tasted it here, and for a couple of years I supposed it to be a different variety and named it "Improved Clinton." But I am satisfied now that it is nothing but the Clinton grown in a more suitable locality. Even the Concord, raised here, is an entirely different grape from that grown in the lower country.

Nearly every section of Virginia is suited for the cultivation of tobacco, but the high-priced smoking and chewing tobacco can be raised only in certain localities. It would be just as foolish to say that on that account tobacco ought to be raised only in these localities, as that grapes for wine should be raised exclusively on the slopes of the Blue Ridge mountains. On the contrary, I go so far as to say that there is no farmer in the State who has not a locality where he can raise grapes enough and of sufficient good quality to make himself a pleasant wine for home use, and advise all to avail themselves of that great comfort; and in some better localities a wine can be produced which will sell at a lower but anyhow paying rate. In such localities people have, of course, to stick to varieties of grapes which suit them. But so much is certain, that the wines which will give Virginia and Maryland the reputation of great grape and wine States have to be raised on the Southern slopes of the Blue Ridge mountains, and of the varieties of grapes which I named above, until we may be favored with better ones.

Hill-Sides or Plains.

The question if a hill or a plain is preferable as a site for a vineyard is, in my opinion, easily decided. It is undeniable that the sun has far more power on a Southern slope than on a plain. In all grape countries of Europe (I can safely say that I know all the prominent ones) the wine made from grapes grown on hill-sides are much higher-valued than those grown on the

plains, and it is not presumable that only this country makes an exception. The wines raised on the hill sides near Forst in the Palatinate (Rhenish Davaria) for instance, are sold in good years to upwards of \$5,000 per Stueck, (860 gallons) while those raised in the plains, within gun-shot from the said hills, sell for \$50 and less. Against that it may be said that that difference will disappear in our warmer climate. But why, on the Island of Madeira, in a climate much warmer than ours, only the wines raised on the Southern hill-sides are fit for the export, while those raised on the plains are sold at a very low price, and used only for local demands.

New Varieties.

I am no enthusiast for new varieties. When I first came here, about 11 years ago, I considered the Catawba, Nortons and Clinton to be the only varieties worth cultivating for wine, and no new variety could change my opinion since, though many were introduced with much eclat, and fortunes were made by those who introduced them. All of them were first pronounced as the very best in the world, entirely reliable and hardy, but after few years they turned out to be nothing, and the grape-growers had to sustain heavy losses. To me the said varieties are all I desire so far, though I do not of course exclude the possibility nor deny the desirableness of getting better ones, but they will not come from the North or West. The varieties cultivated now in these sections are not good enough for our climate, and no seedling from them will ever answer our purpose. The North and West can be profited by raising seedlings from our varieties, and acclimating them in that way, but we cannot be benefited in any way by their varieties. I am planting all the new varieties I can get hold of in my garden, but I am far from expecting to desire any material benefit of them, or to find any valuable varieties for my purpose among them. My object is only to have them, and to offer to my friends a variety of grapes when they come to see me.

In a garden I like to see a great variety of nice rampant-growing vines, with large, well-set bunches of grapes and large berries, but in a vineyard kept for the purpose of making wine I want few valuable varieties, and delight in seeing them as ugly as possible: little, unobscure, dwarfing vines, small bunches and small and shriveled-up berries. I expect that dwarfing the vine, or rather reducing its habit of wild and rampant growth in some way, would improve the quality of our grapes considerably. How that can be done,—if by gradual root-pruning, or in some other way,—has to be found out by experiments.

I, like your correspondents, hope, trust and believe in the ultimate success of grape culture and wine making in this country, though I am not over-sanguine about anything, having met with so many disappointments in life; but there are more serious obstacles in the way than many suppose. It would take too much space to say here about that theme all that could be said, but I want anyhow to hint at a few of the most serious ones.

First, we need a

Virginia and Maryland Grape-Growers' Association.

the object of which is to represent the grape-growers of these States and to take care of their interests. Everybody can easily conceive what such an association could do, and how it has to work, and I think it not necessary to exhibit here a detailed prospect for it, but I want to mention a few of the most essential problems it could solve. Nearly every grape-grower has experienced the difficulty to find a sure and ready market for larger quantities of wine. Domestic wine is not a recognized article of commerce in this country yet, and it is natural that the importers of foreign wine are trying their best to keep up that *statu quo*. The most energetic grape-grower cannot break that phalanx, but the combined effort of all or most of the grape-growers of two States can do it. It would be the task of the said association to establish, say in Baltimore, a depot to which every grape-grower in the States can ship his wine, and attend to the sale of it, covering the expenses by a moderate commission. The association would have to send an agent to the different cities to find customers, &c. In that way the association would find out what kinds of wine are mostly in demand, and advise according to that the grape-growers by circulars how to manufacture them.

Gen. Giddings alludes in one of his letters in the *Farmer* to the fling at the South with which Mr. Husman closes his book on grapes and wine. Now, what I think about the people North and South may be expressed most effectually by stating that I don't know myself how many times I would rather live among Southern than among Northern people. But, nevertheless, I must acknowledge that Mr. Husman was not altogether on the wrong track when he said that the inhabitants of the Southern States are not made of the clay of which grape growers are formed, and I would add that I wish very much a certain portion of the business spirit and capacity, of which the Northern people have, according to my taste, rather too much, could be inoculated in the minds of Southern people. The latter are at present, in consequence of their heavy losses, in reduced circumstances, and anxious to find some way to improve them. I want to show now how some of them are working to realize that. One of them, for instance, hears or reads of grape-growing being a paying business, and concludes to try it, but "on the cheapest plan." He takes no personal interest in it, and wants to have nothing to do with it at all, but hires a man for \$10 a month and three pounds of bacon and one and a-half peck of corn meal a week, and expects him to do not only the working but also the managing and thinking for him, to attend to so many acres of vineyard without any assistance, (of course a Virginian don't like little concerns, and ten acres is the least for a start;) and if the poor laborer needs a horse to plow the vineyard, the owner says: "Oh! I cannot spare a horse, my corn or tobacco crop would suffer." The man becomes discouraged, leaves, and from that time nothing more is done in the vineyard. This is the true history of many vineyard enterprises in Virginia, and the reason

of just as many failures. A Northern man never enters into an enterprise before he has satisfied himself that it pays, but then he goes in with all his strength, tries to gather all the information about it he can, shuns neither trouble nor expense, takes personal interest in it, manages the concern personally, and success is certain. There are some exceptions in the South, but not many. This picture, which is not pleasant to behold, is not only applicable to grape growing, but also, in a considerable degree, to farming and any other business.

The agricultural press can do a great deal towards removing that plight; the zeal and perseverance of our two agricultural monthlies, the *American Farmer* and the *Southern Planter and Farmer*, show in their efforts in that direction are deserving the highest eulogy. May all farmers acknowledge that, read these papers, and adopt the well-meant advice given in them.

His wishes, from the bottom of his heart,

Yours, truly, LOUIS OTT.

Castle Hill Vineyards, near Greenfield, Nelson Co., Va., April 10th, 1877.

Astilbe or Spiraea Japonica.

This is a hardy plant, deserving more popular



favor than it seems to enjoy. The florists appreciate its merits, and make good use of it; but so far as our notice extends, it is not much planted by amateur gardeners, though its delicate feather-like plumes of white flowers are really elegant and useful for all kinds of ornament-

tal work. Vick says it is one of the best plants for forcing for winter flowers, and also an excellent house plant, being pleasing both in cut and flower. Our cut is from Vick's *Floral Guide* for 1877.

A Practical Chapter on Roses.

Messrs. Editors *American Farmer*:

Any one who has looked at the nursery catalogues for the last ten years, and seen the immense number of roses offered for sale, (and no doubt sold,) would conclude, that by this time the country was full of roses. And as the rose, when rightly selected, and well-cared for, is a long-lived plant, roses would be far more abundant than they now are, if only one-half that are planted lived. I do not believe that of all the roses that leave the florists' hands, ten per cent. are alive at the end of the fourth year. The rose has as few enemies as any flower with which I am acquainted. It will brave the winter and withstand the heat of mid-summer, if a judicious selection is made of varieties, and proper care is taken in planting. Suppose we take the tea roses, which do so well in our latitude.

Teas and Bengals.

I have always thought that the most effective way to plant tea roses was in a bed by themselves. As it is desirable to have them keep in bloom through the hot months it is necessary to trench the ground from 1½ to 2 feet deep, not less than 1½, and put plenty of manure and sods at the bottom. The roots will find it. I have often found roses in good mellow loam, with top roots 2 feet long. The bed may be made any shape, but an oblong bed with 5 rows shows the roses to the best advantage, and is easier kept clean.

A very beautiful bed can be made with a row of crimson Bengal roses in the middle, (these work well with tea roses) such as Agrippina, Louis Philippe, Beau Carmine and President d'Oilebecque. For the rows on each side take teas with rose and pink shades, such as Bon Silene, Adam, Madame Damazine Melville, Pink daily, Souvenir, d'une Amie, &c. The outside row, which should be continuous, can be made of any of the many straw-color, white or sulphur-yellows, of which there are so many: Safrano, La Pactole, Madame Falcot, White daily, Madame Bravy, &c.

The tea roses, although tolerably hardy, will sometimes be killed in very cold winters, and are always better for a little protection. I have found nothing better than pine branches or corn fodder, which can be easily used, when the teas are in a bed by themselves. About the last of November I shorten the long branches, then I press the top of each bush sideways to the ground, and cover with pine branches or corn fodder. I then put a few pieces of board or rails to keep the whole steady. They should be uncovered by the middle of March at latest, and pruned close; and, as soon as the ground is fit, it should be spaded with a fork-spade. I cut my tea roses almost to the ground, and though they do not get into bloom quite as soon, they make a finer show in the end. The tea roses like a rich warm gravelly loam, and although they can stand plenty of watering, they will not thrive with stagnant water at the roots.

The Bourbon Roses

come next in value. They are quite hardy, free-bloomers, but lack odor. As they are mostly strong growers, they do well singly, and cannot be too highly recommended, where the teas do not survive the winters. They are not equal to the teas for bouquet purposes. The Bourbons will grow in a stiff loam, if it is rich; and without the land is made rich, no great success can be expected in rose-culture, and no subsequent manuring is equal to that given when the plant is first set out, though applications of soap-suds or manure-water are always beneficial.

Among Bourbons the following are all good: Acidalia, white; Bourbon Queen, rosy fawn; Souvenir de la Malmaison, cream flesh; Hermosa, bright rose; Emotion, blush rose; Empress Eugenie, purplish rose; Paxton, rose, and many others. The Bourbons always make a magnificent bloom in October.

The Noisettes

are tender, and only a few varieties can be recommended for out-door culture in Maryland. They do not as a general rule stand such close

cutting as the teas, but bloom more on the old wood. They are mostly climbers, and some have succeeded by taking them down and wrapping them in straw. There is one grand rose placed sometimes among the teas, and in other catalogues classed as a noisette Gloire de Dijon, creamy yellow, shaded salmon. It has the tea odor, but is quite hardy, more so than any tea or noisette; give it a rich deep soil, and it will grow ten feet high and bloom continuously. I think if I had room for only two roses I would take Gloire de Dijon and Hermosa.

South of the Potomac, and especially in the Cotton States, the noisettes flourish finely. They contain some of the finest roses known, such as Selfatare, Lamarque, Chromatella, Celine Forrester, Ophir and Woodland Margaret. The beautiful Marechal Neil is also placed with the noisettes.

The Hybrid Perpetuals,

which are crosses between the old hundred-leaved rose and the Bourbons, are charming roses, and were they really *perpetual* with us, as their name implies, they would stand at the head of the list. They make with us one fine bloom in June, and occasional blooms through the summer and fall. They are all hardy and strong-growing, and are invaluable in colder latitudes, where even the tough Bourbons succumb to the intense cold. In the New England States, and also in the Northwest, they keep up quite a continuous bloom, and in the cool moist climate of England, bloom almost as freely as the Bourbons. But their beauty is so great that their culture pays well for the one bloom that they give us in June. You cannot get the ground too rich, and some varieties will grow six feet high, and as much through. The size of the blooms is increased by pruning. The number of varieties is almost endless, and catalogues are full of names, with but little if any of difference in the blooms. The following are good old kinds: Auguste Mie, Caroline de Sansal, Victor Verdier, La Reine, Baronne Prevost, Jules Margottin, General Jacqueminot, La France, Geant de Battailles, and Anna de Diesbach. CHAS. H. SNOW.

Harford Co., Md.

Chestnut Hill Views—No 6.**Rock-Work.**

Messrs. Editors American Farmer:

Mr. Cook's article on greenhouse rock-work is excellent, but I think I can suggest an improvement on his directions,—not only for greenhouse rock-work, but for rock-work generally. I know of nothing more ridiculous-looking than the heaps of stones usually called rock-work about our country places. Most of them are an absolute deformity to otherwise pretty places. In putting up rock-work I always use hydraulic cement to join the stones together, not neatly as a mason would, but using nearly as much cement as rock, and daubing it roughly, leaving pockets and honeycombed interstices throughout the whole mass when the whole is set and hard; then make a wash of the cement, and go over the whole so as to give it the appearance of a solid mass. Then fill all the pockets and the honeycombed interior with soil, and you have a piece of rock-work that has the exact appear-

ance of an old grey mass of rock partly protruding from the soil. This, when covered with suitable plants, and not too many of them, is a charming object in a proper location. A piece of rock-work made in this way in a shady corner of the greenhouse, and covered with *Selaginellas*, with an occasional *Rex Begonia* and a few dwarf *Ferns*, will be a thing of beauty and a joy forever.

We do not agree with your correspondent D. M., in March No. of the *Farmer*, that the rust is driving the *Verbena* into the background. It simply requires a little more care to grow *verbenas* in winter. Years ago, before the rust came, *verbenas* thrived with any kind of culture, but now such neglect will not do, and gardeners will soon learn to care for their *verbenas* as they do for other plants which need special treatment. We have nothing that can take their place in the flower-beds, and for that reason alone they will not be neglected.

Private Places Selling Flowers.

Capt. Snow has entirely mistaken my meaning in my remarks about private growers selling flowers. I did not question their *right* to sell their flowers, but simply stated that they were doing injustice to the trade without benefitting themselves by selling at prices far below the cost of their production. As a case in point, I have heard of one wealthy gentleman who, during the last Easter week, sold his *Marchal Neil* rose-buds at \$3 per hundred. Now any one in the trade knows that this variety of buds cannot be sold at this price except at a loss, and this gentleman could just as easily have gotten treble the price for them. Capt. Snow says that most gentlemen of wealth keep their glass structures as part of their establishment. So do some gentlemen keep cellars stored with choice wines as a part of their establishment, but if they directed their butlers to sell their choicest brands to all comers at five cents a glass in order to partly defray the expense, it would be thought a silly transaction. In regard to Capt. Snow's statement of his information from a prominent florist that he would not know what to do without the help of the private places, I will venture the assertion that there has not been a day during the past winter where the trade could not have furnished all the flowers used in Baltimore. Even at Easter, when the newspaper reporters were telling such tales about the quantity of flowers used and the great number brought from the North, I know of at least two establishments that could each have furnished fully three hundred dollars worth more than were called for, and this when prices averaged nearly one-half lower than at the same date last year. A gentleman some time ago visited the beautiful conservatory at Patterson Park, and expressed to Mr. Fraser his surprise at the profusion of bloom, as he had been expecting to see something similar to the conservatories at numerous grand country-seats around the city, where the owners had every bloom cut for the market as fast as it appeared. I repeat it that no one who grows flowers for the love of them ever cares to sell them, and would suggest to those gentlemen who try so hard to make their gardens pay part of their expense that they might start cheap restaurants,

and thus pay part of their table expenses. But there are even around Baltimore private greenhouses that sell no flowers, and the contrast between these and the more pretentious establishments of the millionaires who huckster blooms is strikingly in favor of the smaller places. In the one place the gardens and the conservatory are kept as part of a grand establishment, and to make an aristocratic display of means. In the other the greenhouse is kept by the owner and his family for the love of its beautiful inhabitants, and is to them a joy forever; while the millionaire is grudging the funds necessary to keep up this part of his establishment, and strives to squeeze all he can out of a thing only kept for vulgar ostentation. But I have devoted more space to this than it deserves. W. F. MASSEY.

Chestnut Hill, April 18, 1877.

The Vegetable Garden.

May.—The tender vegetables may now go out, other seeds be sown, and the work of cultivation must be begun and kept up uninterruptedly. A good, sharp-toothed rake is the best tool in small gardens, but a horse-cultivator in large ones is far more effective than a dozen men with hoes. Don't give the weeds a chance; attack them before they are up.

Lima Beans may now be planted in rich soil. Do not have too high poles. Cucumbers, melons and squashes also need rich situations, and should not be put out until the earth is warmed up. Corn may be planted every ten days for a succession. Root, in his *Manual*, says: Corn, peas, and beet seeds are profited by soaking, and melons and cucumbers hastened by it; and that to bring forward a hill of vines rapidly pour boiling hot water upon it after planting and cover with a glass or inverted flower pot to retain moisture. The plants appear in from 24 to 48 hours in ordinary weather.

Cabbages and cauliflowers of the early crop need to be unceasingly worked. Cultivate them deeply, and, if dry, water the latter abundantly. Seed for late crops should be sown.

Egg plants need the richest soil and an occasional dose of liquid manure. Peppers and tomatoes may be set out, and seeds sown for late crops. Sow beets for late crops.

TOMATO TRELLIS.—A cheap and convenient trellis for tomatoes is a four square frame for every hill. It requires corner posts, each about two feet long and one inch square, and three pieces of lath, each one foot long, nailed on each of the four sides. Such trellises cost only a few cents, and save many times their cost in tomatoes. If such a trellis be placed around each hill before the plant is full grown, the fruit will be kept off the ground. It may be made of durable wood and carefully stored during the winter, and thus will last a score of years—especially if dipped, before using, in a kettle of coal tar—*Orchard and Garden*.

RATS may be driven away by throwing a little the powdered potash, mixed with meal, in their holes and run-ways.

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MAY 1, 1877.

REMOVAL.

The publication office of the AMERICAN FARMER has been removed, on account of improvements in its former quarters, to No. 128 W. Baltimore street, over the Bulletin office, and nearly opposite the American and Sun buildings. We shall here be pleased always to see our friends, new and old.

Bills.

Those of our friends who have not paid their subscriptions for the current volume will find bills in the present number, as will some others longer in arrears. These individual bills are small, but the total to us is a large amount, and it will be a very great accommodation to us to receive the sums they call for as promptly as possible.

DEFERRED.—We have on hand, received too late for this issue, a number of interesting communications. Among these, reports from the Woodlawn, Va., Agricultural and the Potomac Fruit-Growers' Societies; a valuable paper on Chemical and Domestic Manures from Wm. Holman, of Va., and others. We regret that sickness has compelled Mr. Brackenridge to forego preparing the seasonable hints for his Department this month.

The able and valuable papers which will be found in this month's issue, have seldom, if ever been equalled in a single number of our journal.

The Need for an Agricultural Experiment Station in Maryland.

Two of our correspondents discuss in this issue the necessity of an Experiment Station in this State, for the benefit and protection of our farmers. We have ourselves more than once referred to the subject, confident that the results from such an establishment, in capable and incorruptible hands, would be most satisfactory and useful.

The State could well afford to appropriate the very moderate sum which would be required to provide and equip such an institution, and the expense of its maintenance would be insignificant as compared with the public aid afforded almost every other, save the agricultural, interest. We will not stop now to consider how much more productive an investment of this kind would be than some other appropriations which the State gives in the name of agriculture.

In Connecticut, where the first of these stations in America was set in operation about a year ago under the efficient direction of Prof. Atwater, (a pupil of Prof. Johnson, and a chemist peculiarly qualified for the work by a training in the experiment stations of Germany,) the entire fund for its annual support was \$2,800, appropriated by the State, to which a donation of \$500 was added by Mr. Orange Judd. It was fortunate, however, in having at its disposal the well-equipped laboratory, apparatus, &c., of Middletown University. So conspicuous has been the success of this modest establishment that the legislature has recently passed a law converting it into a State institution and increasing the appropriation for its annual support to \$5,000—"for the purpose of promoting agriculture by scientific investigation and experiment."

The work of this station has been almost entirely directed, so far, to examinations of the character and value of the commercial fertilizers sold in the State; but it is not such investigations alone that are to be prosecuted, although they offered the most urgent claims upon the early attention of the chemists. Even in the future a very considerable proportion of the inquiries at these stations will for a long time bear upon such questions, but their scope is far wider, and in this State many topics connected with the amelioration of our soils and the production of our staple crops will come early under examination.

It is not to be understood that the foundation of these stations implies or develops any antagonism towards manufacturers and dealers in artificial fertilizers. The converse is true. In Con-

necticut, all parties making or selling these wares in the State were invited to a conference, and an agreement was made by which they placed their articles "under the supervision of the station," and guaranteed that their customers should always get what they bought,—the minimum of nitrogen, potash, phosphoric acid, &c., in each brand being determined. In all cases of dispute or doubt the station was to be made the examiner and umpire.

The outcome has been most satisfactory to the dealers as well as to the farmer. No fertilizers are now sold in the State that are not under this supervision; and we suppose they could not be sold at any price. Some poor and doubtful compounds have been driven out of the market, but the trade of all reputable firms has been greatly augmented from the confidence now prevailing in the place of former uncertainty and distrust.

Besides this, just as in the case of the free inspections in Georgia, referred to in the *American Farmer* for April, the standard of quality has been raised and the price lowered, while the consumption has heavily increased, so well assured is the farmer that he will now receive in his fertilizer ingredients to the amount and of the quality he pays for.

At the Connecticut station all analyses for public use are made gratuitously; those for private purposes are charged for at a moderate rate. The law gives a purchaser recourse for damages where the fertilizer falls short of the guaranteed composition.

In this State, if we understand the law, every manufacturer or seller is required to brand on each package the per centage of valuable ingredients the fertilizer contains—that is, in short, the manufacturer "must state what he sells and sell what he states." But there is no inspector, with fees and salary (as we are glad to say); nor is there any umpire between buyer and seller. Any individual must go to considerable expense to have an analysis made, and must then resort to the delays, expenses and uncertainties of the law if it shows deficiencies from the formula claimed. It is here the Experimental Station would be most serviceable.

A bill making provision for such a system as that under consideration, is now before the Legislature of New York, and the largest manufacturers are advocating it. No doubt those of our State would do the same, since it is to their manifest advantage to place the business on an assured foundation, and to have discarded inferior grades, the use of which, more than anything else, con-

tributes to the disuse and mistrust of the concentrated fertilizers of commerce.

We hope the farmers of our State will consider the subject as its importance deserves.

The State Agricultural Society.

We see it announced by the daily papers that this association will from October 16th to 19th hold an exhibition in connection with the Carroll County Society at Westminster. The vacancy in the presidency was filled by the Executive Committee by the election of Mr. Jos. H. Rieman, a gentleman who once before filled the same position, but whose administration was not a very successful one. Col. W. A. McKellip, president of the Carroll Society, was placed on the Executive Committee.

The State Society is generally regarded as moribund, and this movement, we take it, is only designed to nominally extend its existence under the requirements of its charter, until control can be regained of the expensive grounds at Pimlico, on which the Jockey Club have an unexpired lease that would interfere with their advantageous sale. It is possible also, that by designating the show at Westminster as that of the State Society, the appropriation of \$2,000 may be secured instead of the smaller one of \$500 allowed conditionally by law to county societies. We hope this may be the case if it will benefit our Carroll friends, some of whom, especially Col. McKellip and Mr. Haines, the present and former presidents, have worked strenuously for the establishment of a successful local society.

The Agricultural College.

On another page will be found a report of the annual meeting of the stockholders in this institution. In the election there were two parties possessing equal strength, whilst a vote nearly as large as that of either made an entirely independent element. The intention at first was to hold this vote—palpably the balance of power—so as to secure the selection of such a Board as should not represent exclusively either of the opposing sides. This determination, however, was altered. The claims made of the entire extinguishment of the debt by the agency of the administration now in charge, and the freely-expressed purpose to now make the College agricultural in fact as well as in name, led to an action at least unusual in such contests. It was concluded in a spirit of fairness and moderation, and in the face of most liberal concessions offered by their antagonists, that the old Board should be afforded the opportunity of carrying into

effect the programme of change announced; and the same trustees were accordingly all re-elected, save one who had been in sympathy with the opposition, and who was replaced by the (Junior) Editor of the *American Farmer*.

It will not be amiss, perhaps, for us to say here, especially to some of our correspondents who express surprise that we should now be found on the same Board, with whose course we have had occasion in the past to find considerable fault, that it is owing to no compromise of our position and no change in our views.

The gentlemen who composed the Board are men of honor who were conscientious in their direction of the affairs of the College. We, as conscientiously, believed that their management was wrong, and we had no hesitation in saying so. But here, as in many other cases, time has obliterated any differences of views between us.

The College has come to a point where "out of debt, out of danger." It is conceded on all sides it can now safely undertake the peculiar work it was established to perform. To us it seemed that it should have been doing this all the time, even under its embarrassed circumstances. We felt confident, put on the track of usefulness, our farmers would give it their cordial countenance and support. Those in authority thought otherwise, and resorted to special instruction to certain classes as an expedient to increase its revenues. This will now, we hope, be abandoned, the necessity in which it originated no longer existing.

It is given out that the policy of the trustees is to make the course of instruction cover in the future scientific, practical and experimental agriculture. The instructions of the stockholders, adopted without any show of opposition, are identically to the same effect.

It is impossible to conceive that in a Board of eleven members there will not be a variety and even a diversity of views. That these will be harmonized to produce the best results we are confident. The problem of Agricultural Education is not yet fully solved, but there are lights to go by which were entirely wanting when the public-spirited founders of our Maryland College set about their patriotic work.

Here, the most perplexing obstacle in the path to usefulness is the ill-contrived method of control. As it now exists, nothing can be certain, permanent, or successful. No definite plan of instruction, experiment, or government; no fixed faculty; no regular precession of pupils; no incitement to useful researches by teachers or students; no *esprit de corps* among either;

no pride to the farmers of the State in its work or capacity for work—in short, no valuable result of any kind can be counted on until the present system is entirely remodeled. The question is a difficult one, but we hope the Trustees will apply themselves to find a solution for it.

Well-directed Enterprise.

Elsewhere will be found a considerable space devoted to extracts from several prominent journals of the country showing the enormous shipment—the first of several—from the place of their manufacture to this city for distribution, of Champion Mowers and Reapers. This was not only an effective way to exhibit the proportions their production has reached, but it afforded an opportunity for their enterprising manufacturers to give impressive testimony to the fact that the industrial interests of the country are not so stagnant as some might believe, and thus tend to stimulate to activity other branches of trade. Of the merits of the *Champion* itself there is no need for us to speak, this immense shipment itself going far to vouch for their appreciation by our farmers. All of the machines in this great train, the Messrs. Lee inform us, were all sold in advance, and that later shipments will be necessary to supply the usual current demands as the season advances.

COL. JNO. W. WARE, of Clarke county, Va. recently called upon us, and in appearance seemed scarcely older than when, almost a score of years ago, he was so prominent at our Maryland State shows. The Colonel, we understand, has been named, among others, for the office of Commissioner of Agriculture at Washington. His appointment would please greatly his numerous friends, who in Maryland and Virginia recognise his enterprise as a breeder of improved stock, and his activity in associations designed for the advancement of agriculture.

Books, Pamphlets, &c., Received.

We have a large number of these which should have been noticed before but for the pressure on our pages. We will try to clear up the list next month.

NEW QUARTERS.—Our old friends, Thos. Norris & Son, will hereafter be found at 42 Light street, where they will continue to keep the Wood reapers and mowers, and a general assortment of agricultural implements and machinery in stock.

THE INQUIRY from Virginia about Cecil hay has been referred to one of our progressive farmers' clubs of that county, from whom we hope to have an interesting report.

The Grange.

The Value of the Grange.

Abolish the grange, and you take away, in the first place, what may be made a powerful inspiration to study and a valuable means of instruction. It is not possible for any man to investigate for himself all the subjects which it would be profitable for him to know. Especially is this not possible for a man whose time is nearly all consumed in the pursuit of some exacting calling. Busy men have, therefore, much need to co-operate in study; to form societies and divide the work, assigning to one member one field for investigation, to a second another—thus confining each member to the kind and quantity of work he can do best, and securing to the whole society the results of each member's labors. Such a society, the grange might and should be made. Its inquiries should be directed chiefly to the various departments of agriculture; but other sciences and branches of knowledge should receive some attention. Besides directing the investigations, the granges should also furnish some of the tools necessary for making them. To land and such implements as plows, reapers and planters, most members have easy access; but to books, which are often as essential as land, plows, etc., they have not easy access, and should therefore be furnished with them by the grange.

Abolition of the granges is, in the second place, the destruction of about the only means farmers have of neutralizing the evils of living far apart from one another. The granges furnish them opportunities and occasions for meeting together that would be wanting if there were no granges. The custom of visiting is, perhaps, more sedulously observed in the country than in the towns; but there is no running in for a few moments in the country, and hence the farming classes have much less intercourse with one another than town people have. There is, therefore, no danger that the granges will give farmers too much society; and without the granges, they are sure not to have enough.

It appears, then, that, without the granges or similar organizations, farmers are not likely to extend their knowledge, or increase their intercourse with one another; and it therefore becomes a pertinent inquiry whether, since they have the granges, and since the granges have as few incorrigible imperfections as any society is likely to have, farmers can afford to allow the granges to go down. The usual answer will be, we trust, emphatically affirmative.—*Grange Bulletin*.

Among other things, we might mention, the happy influence which has been exerted by the organization of subordinate, State and National granges upon the minds of our class. Farmers have made progress within the past few years, in the knowledge necessary for the conduct of their public and private business. They are holding up their heads among their fellow-men, and learning their rights, and how to gain and preserve them. As our order grows in years, it will, no doubt, show a greater and greater gain in breadth and compass of mind.

Grange Convention.

On the 29th of May there will be held at Upper Marlboro, Md., a convention of Patrons of Husbandry, to consist of delegates from the granges in the counties of Anne Arundel, Calvert, Charles, Prince George's and St. Mary's.

Homeland Grange.

A new grange was organized near Govanstown, Baltimore county, Md., on the 6th ultimo, under the above title,—Col. B. F. Taylor, a deputy of the National Grange, installing the officers, whose names are given below. One of the local papers, the *Towsontown Journal*, says of the membership of the new grange, that they are all in active agricultural pursuits, and the gentlemen who are at the head of the movement are well known for their energy and perseverance, which gives a promise of success for the new undertaking.

• At later meetings a number of applications for membership were received, and the indications are that this grange, the nearest one to Baltimore, will be a large and influential one. On the evening of April 20th, Bro. E. J. Hall, late W. M. of Montgomery County Grange, and long president of the flourishing Agricultural Society of that county, made a short but effective address to the new grange on the aims and objects of the order of Patrons of Husbandry.

The following are the officers:

Master, Archibald Brackenridge; overseer, Augustus W. Sweeney; lecturer, Wm. D. Brackenridge; chaplain, James Pentland; secretary, Geo. R. Buckman; treasurer, Alex. Brodie; steward, Peter Ruhl; assistant steward, Lewis Dawson; gate-keeper, Isaac Moss; lady assistant steward, Mrs. Jas. Pentland; Ceres, Mrs. Lewis Dawson; Pomona, Miss Belle Brackenridge; Flora, Miss M. E. Hamilton.

We are taught in the grange that good morals should be promoted among us, that perfect peace should be the fruit thereof. There is no better place where fathers, mothers, brothers and sisters, can mingle and unite in teaching and learning the principles of right. Next to good morals come the improvement of the intellect. In our subordinate granges, no better chance was ever had to attain to a certain grade in the art of speaking and writing; even those who have not had advantages, or have not improved those realized, may improve to such a degree, that when requested to write or speak on a subject of vital interest to themselves, brothers will heartily respond, for the very reason that they have been educated in the great intellectual grange reform.

A RECIPE FOR MAKING GRAFTING-WAX, from a practical nurseryman of great experience, is,—rosin, six pounds; beeswax, one pound; tallow, one pound; melt, and work until cold. This is to be used warm, when working in the house. For out-door work, J. J. Thomas recommends the same formula, except using linseed oil, one pint, in the place of the tallow. For out-door work, a good wax is made by using one to two pounds less of rosin, and one and one-half pints of linseed oil; to be melted, made into a mass, and applied by hand.

The Breadstuffs Market.

Since our last issue the question as to war or peace in Europe has been settled by a declaration of war by the Czar of Russia, followed by the movement of the contending armies to the Danube, and the beginning of actual hostilities. At this writing (April 30) the English government is making active preparations of troops and transports to take part in the contest should interest demand; and the other nations of Europe are also arrayed to take active steps under circumstances calling for their participation. The result of the beginning of the war has been to send up breadstuffs and increase the feverishness of the markets of the world. Fortunately for this country we are now in a condition to take advantage of these circumstances. We are at peace among ourselves, and are just putting in our spring crops, which every intelligent farmer cannot but perceive must be demanded to supply the calls already upon us for our breadstuffs and provisions, to meet the necessities of those countries which cannot raise sufficient food for their necessities. The very seat of the war now going on is within the boundaries of those localities whence these extra supplies have heretofore been received; of course thus leaving the field clearer for our commerce.

In this view of this state of the case, we unite with the intelligent Commissioner of Agriculture of Georgia, Dr. Jancs, in recommending the farmers of the country to increase the area of corn even if they have to reduce that of cotton, the demand for the latter being likely to decline, in consequence of the unsettled state of Europe. "If the war should be averted—of which there is, at present, little probability—we will have lost nothing by the above policy; if not, we will have provided against the possibility of loss or suffering. In either event, those who adopt the above advice will have nothing to regret, while those who do not may be compelled to purchase provisions at ruinously high prices, and pay for them with cotton at prices even below the cost of production. Let them plant crops for their hogs, and force them forward—to secure, as nearly as possible, a supply of bacon for home consumption. Let them plant liberally in German millet and field peas, to supplement their corn crop in feeding stock, in order that more of their corn may be used for bread."

In the Middle and Western States it so happens that there is time now to avail of these suggestions, as we will have ample opportunities to increase our corn and forage crops to an almost unlimited extent. Our wheat fields give every assurance of abundant harvests, and, so far, our fruit crops afford indications of a superabundant yield.

The comparison of prices between our reports for March and April, will show the great advance which has taken place; and the great fear now is that the rage for speculation on time and for future delivery, which is nothing less than gambling, will be attended with serious consequences to those engaged in it, and bring about a reaction which will be widespread in its injurious effects.

Baltimore Markets—April 30.

Quotations given below are Wholesale Prices;

Breadstuffs.—Flour.—The upward movement continues, and for high grades prices were advanced 10-day 50 cents ∇ brl. In the medium and lower grades the whole market is very strong, with the receipts and stocks light, and holders generally indisposed to sell except at very full rates. We quote as follows, viz: Howard St. Super \$7.00@7.50; do. Extra \$8@; do. Family \$10@11; Western Super \$7@7.50; do. Extra \$8@9; do. Family \$10@11; City Mills Super \$7@7.50; do. standard Extra \$8.50@9; do. medium Extra \$9.50@9.75; do. Rio brands Extra \$11; Spring Wheat Flour, \$9@9.15; do. patent \$11@12; fancy brands \$12; Fine \$16@16.50; Rye Flour \$5@5.50; Corn Meal, City Mills ∇ brl. \$3.75@4.

Wheat.—Market strong and buoyant in tone, but offerings are limited. We quote: Southern red, \$3.35@ \$2.30; Pennsylvania red \$2.30@2.50; Pennsylvania amber \$2.30.

Corn.—Western active but irregular. Southern quiet under light receipts. We quote: Southern white 71@72 $\frac{1}{2}$ cts.; do. yellow 71@74 cts.; Western steamer 66 cts.; do. mixed 73 cts.; do. May delivery 73 cts.; June 73 $\frac{1}{2}$ cts.

Oats.—Receipts light, and the market quiet but strong, with quotations as follows: Western mixed 50 cts.; do. bright 52@53 cts.; Southern, fair to good, 49@53 cts.; do. prime 53 cts.; Pennsylvania 53 cts.

Rye.—Firm and advancing, and we now quote good to prime firm at 110@112 $\frac{1}{2}$ cts.

Hay and Straw.—For the former there is a good shipping demand and both are firm. We quote: Hay—Cecil county \$19@20; do. prime Pennsylvania and Maryland \$16@18; do. mixed \$14@17; do. Clover \$12@14; Straw—Wheat \$10; do. Oat \$13; do. Rye \$17.

Live Stock.—Beef Cattle.—Fairly active and prices well sustained. Prices ranged as follows at last market: Best on sale 5 $\frac{1}{2}$ @6 $\frac{1}{2}$ cts.; generally rated first class 5@ 5 $\frac{1}{2}$ cts.; medium or good fair-quality 4 $\frac{1}{2}$ @5 cts.; ordinary thin Steers, Oxen and Cows 3 $\frac{1}{2}$ @4 cts. **Pigs.**—Active and firm, with quotations at 7 $\frac{1}{2}$ @7 $\frac{1}{4}$ cts. net. **Sheep.**—In demand at 45@47 cts. gross. **Lambs** \$3.50@3 $\frac{1}{2}$ head.

Potatoes.—Maine \$1.40@1.45; Early Rose \$1.00@ \$1.70 ∇ bus.

Provisions.—Steady, but not active. Quotations are given as follows: Bulk Shoulders, packed, 6 $\frac{1}{2}$ @6 $\frac{1}{2}$ cents; do. clear-rib Sides, packed, 9 cts.; Bacon Shoulders, packed, 7 cts.; do. clear-rib Sides, packed, 9 $\frac{1}{2}$ cents; do. Hams, sugar-cured, 12 $\frac{1}{2}$ @13 $\frac{1}{2}$ cents; Lard, refined tierces, 11@11 $\frac{1}{2}$ cts.; Mess Pork, ∇ brl. \$11.00.

Butter.—Fine grades in demand; medium grades dull. We quote: New York, new, 22@21 cts.; Western 18@20 cts. **Cheese.**—Quiet; Eastern, good to choice, 14 $\frac{1}{2}$ @15 cts.; Western do. 13 $\frac{1}{2}$ @15 cts. **Eggs.**—Fresh, 12@13 cts.

Tobacco.—The demand for Ohio is good, but Maryland is dull from the poor quality of the offerings, but good grades sell readily at full prices. The *Journal of Commerce* says the French contracts are to be awarded early in June, and the following statement shows the requirements for the season, compared with the amount taken last season:

	Required 1877.	Taken 1876.
	hhd.	hhd.
Of Kentucky.....	10,200	12,400
Virginia.....	4,000	4,500
Maryland.....	6,000	5,100
Ohio.....	6,000	3,400

Total.....27,400 27,900
We quote: Maryland—inferior and frosted \$3@4; do. sound common 4 $\frac{1}{2}$ @5; do. good common \$5.00@7.00; do. middling \$7.50@8.50; do. good to fine red \$9@10; do. fancy \$12@15; do. upper country \$4@20; do. ground leaves, new \$3@3. Virginia—common and good lugs \$6.00@7.00; do. common to medium leaf \$7@8; do. fair to good leaf \$10@12; ∇ o. selections \$13@15; do. stems common to fine \$1.50@2.

Wool.—Tub-washed 35@33 cts.; unwashed 25@30 cts.; fleece-washed 28@30 cts.

THE AMERICAN FARMER.

[From the Baltimore American.]

Industrial Triumph.

The Workshop and the Railroad—Bringing East the Product of a Great Western Manufactory—the Freight that Occupied Seventy-Two Cars—How the People Welcomed the Aids to Agriculture.

HARRISBURG, PA., April 27.—In the year 1853 a harvesting machine, as crude in appearance as Stephenson's first locomotive, was built by Mr. William N. Whiteley, a farm hand, in Ohio. Its merits were, however, soon acknowledged, and in three years it had become so popular that all the machines which the limited capital of its inventor enabled him to build were, as rapidly as he could manufacture them, disposed of. He soon associated with him in business two other men, who saw the future in store for them, and the firm name was changed to that of Whiteley, Fassler & Kelly. That house also formed a joint stock company—the Champion Machine Company—the original partners holding a large number of shares. Another firm of manufacturers of agricultural implements saw the success which was attending the venture, and received the right to build the machines, paying for this a certain amount of royalty. In addition to these, a factory was established for the making of the bars and knives attached to the machines, as also a malleable iron work, which will give some idea of the gigantic proportions such a small beginning has attained to: Each firm controls a certain amount of territory in the United States, that of Messrs. Whiteley, Fassler & Kelly having apporportioned to it the Southern States, embracing Maryland, Pennsylvania, Delaware, Virginia and North Carolina, with a portion of the Western States, with a branch house at Nos. 54 and 56 Light street, Baltimore, of which Messrs. L. H. Lee & Bro. are managers. Since the year 1870 the trade done by this house in the above States has increased most marvellously, they having sold during the last year five thousand machines.

When a representative of the *American* learned a few days ago that an immense train of cars loaded with machines was on its way from Ohio to Harrisburg, he became interested in the matter, and accepted an invitation from the Messrs. Lee to be present in that city to-day and witness its arrival. The train, which consisted of seventy-two covered cars, containing seventeen hundred machines and representing a cash value of \$250,000, left Springfield on Tuesday last divided into four sections. The public were much interested lately in the passage across the Continent of a rich consignment of silks and teas from Japan, but this was almost eclipsed by the eagerness with which each city along the route watched the progress of this other train. It was not fragrant with the odors of the East. It did not associate it with dreams of the

barbaric splendors of the Orient; yet, although only composed of prosaic wood, iron and steel, it conjured up thoughts of waving fields of grain which American enterprise and industry could mow down swiftly and gather in safety for the benefit of the world.

The notice of the transit of the train was telegraphed to St. Louis, Chicago, Cincinnati, Columbus, Newark, Pittsburg, Altoona and other cities through which it was to pass. Originally divided into four sections, it was at Altoona consolidated into one, drawn by engine No. 105 of the Pennsylvania railroad.—Mr. Jas. McCrea, Superintendent at Harrisburg, having determined to show what that powerful locomotive was capable of in drawing a weight of eighty tons. When the *American* representative arrived at Harrisburg he found brother journalists there from Philadelphia, York, Lancaster, West Chester, Mechanicsburg and Williamsport, as also from the Harrisburg press, all eager for the fray, and looking for something, which, when found, they would make a note on. A number of local and travelling agents for the sale of the machines in the State were also in the city, attracted both by interest and curiosity. The United States Hotel presented a busy scene, almost equal to the Legislative session, and as the State Superintendents of Public Schools were holding their annual session at the Capitol, the reporters were naturally mistaken in many cases for these worthy gentlemen,—a compliment which they received with that blushing modesty so characteristic of the profession.

The day was spent in social converse, visits to the State House and postprandial cigars and coffee. It was expected that the train would arrive at four o'clock P. M., but the Superintendent of the road in making his calculations had not considered the magnitude of the task before him, nor the prospects of rain, which came down heavily, rendering the rails slippery and impeding progress. The result was that five cars had to be left behind at Lewiston and eleven at Marysville. About half past six o'clock word was passed that the train was in sight. The citizens had by this time gathered out in numbers. The steps of the hotel were crowded, and the long array of cars with flags flying passed slowly through the city. From the departure of the valuable cargo from Springfield, Ohio, until its arrival here not the slightest accident of any nature occurred. The seventeen hundred machines are all intended for points east of this city, with the exception of two car-loads, which will be sent to Baltimore, and will at once be distributed in the various localities for which they are intended. This is the largest single consignment of reaping machines ever sent to any part of the continent, and Messrs. Lee & Bro. are confident that they will have two more such shipments within the next two months. Amongst all the indications of reviving business an event like this is the most encouraging. It shows not only that the agricultural element in our own and neighboring States is ready to avail itself of every advantage which improved home manufacture presents, but also that the signs of the times warrant it in expending its savings, with a full consciousness that a rich harvest will yet be reaped from the outlay. J. V. H.

THE AMERICAN FARMER.

[From the Cincinnati Daily Gazette.]

THE "CHAMPION."

Signs of a Genuine Revival of Business at Springfield, O.—The Heaviest Shipment of Reapers and Mowers Ever Made in America.

SPRINGFIELD, O., April 24.—Facts are stubborn things, and figures based upon facts can not lie. After so much has been said and written in the way of predicting a revival of business, in which it has seemed hitherto that the wish was father to the thought, it is a solid satisfaction to put on record a genuine, unmistakable proof that the revival of business is upon us in a tangible form, which can be seen, measured, and enumerated. To the promise of abundant grain crops in all parts of the country, and to the energy and foresight of the manufacturers, who provide the means of securing that harvest, these healthful tokens are due.

The firm of Whiteley, Fassler & Kelly, of Springfield, Ohio, manufacturers of the world-renowned *Champion Reapers and Mowers*, have to-day dispatched four railway trains loaded with these machines to Harrisburg, Pennsylvania. The four trains in all comprised seventy-two cars, and each car contained twenty-five *Champion Reapers and Mowers*, making a grand total of 1,818 reapers and mowers. This may be safely put down as the largest single shipment of machines on record, in this or any other country. It makes in itself a great industrial pageant, a triumphal progress, for which no other country but America could furnish the material.

This quadruple train, or railway caravan, left Springfield to-day at noon, via the C., S. & C. Railway to Columbus; thence via the P., C. & St. L. Railway to Pittsburg; thence via the Pennsylvania Central Railway to Harrisburg. Fifty out of the seventy car-loads of machines are exclusively for the State of Pennsylvania, and the remainder for Delaware and New Jersey.

It will be observed that this shipment is to what may be called Centennial territory. It is in fact the first fruits of the signal triumph of the *Champion Reaper and Mower* at the Centennial Exposition, where their superiority was so fully demonstrated as to open new fields for their introduction in all the grain-growing regions of the world, but especially of Pennsylvania and its neighboring States. The wheat prospect is unusually fine in that section, and the same is fortunately true of nearly all parts of the continent, and it should further be stated that to the energy and ability of Messrs. L. H. Lee & Bro., of Baltimore, the impetus to the sale of these machines, of which this immense shipment is a token, is largely to be attributed.

The European demand for the *Champion Reapers and Mowers* is also very extensive and large shipments have been made to that market the present season. It is probable that 30,000 machines or upward will be turned out by the "*Champion*"—Messrs. Whiteley, Fassler & Kelly and others, manufacturers, for the harvests of 1877.

The march of this huge procession from Springfield to Harrisburg was a spectacle worth seeing. The seventy-two cars were all alike, and all furnished by the Pan Handle people. Each car was profusely decorated with flags, and also with placards announcing its destination, and for whom its quota of machines is designed. While the *Czar* is hurrying forward his troops to the crossing of the Pruth, America may well be thankful for no more warlike sign than this movement of re-inforcements to the peaceful grain fields of Pennsylvania.

[From the Columbus, O., Journal.]

A Tremendous Train of *Champion Reapers and Mowers*—A Substantial Evidence of Business Revival.

Seventeen hundred *Champion Reapers and Mowers* from the manufactory of Messrs. Whiteley, Fassler & Kelly, at Springfield, Ohio, will pass through this city to-day, in one shipment, by the Star Union Line, for Harrisburg, Pa. The value of the shipment is \$250,000, and the train—or rather the four trains—necessary to transport the machines, will consist of seventy-two cars. The machines, if placed in a line, allowing twenty-five feet (the usual distance) to each machine, would make an agricultural procession nine miles long. This large shipment, without breaking bulk, is an example of enterprise in transportation which must command attention. The trains will arrive in this city this evening and leave for the East to-morrow morning, the arrangement being that the run shall be made by daylight, with banners flying, and proclaiming to the people along the road a wonderful achievement in manufacture.

This shipment may be regarded as a decided index of revival in business; it will be accepted as a ratification of hopes that have been expressed for some months on all hands. The machines are all from the Pennsylvania district, and nearly if not quite all of them have already been sold by the agents.

The *Champion reapers and mowers* manufactured by Whiteley, Fassler & Kelly have become celebrated throughout this country, and are rapidly gaining foothold in foreign parts. The heavy shipment above described is an attestation of the popularity of the *Champion*, of which the manufacturers, as well as the people of the State from whence they hail, may well be proud. The large demand in Pennsylvania is doubtless, in great part, the result of the signal triumphs of the *Champion* at the Centennial. Its manufacturers brought on a competitive trial there, and after "carrying the horns" in all ordinary work, it was put to extraordinary tests in which it did work perfectly which other machines could not do indifferently. In order to show all of the merits of the *Champion* a field of grain had to be rolled, and then soaked into the ground by a rain storm. The *Champion* seems to be appropriately named.

A Card.

At a meeting of the Horticultural Society last night the judges awarded to me the premium for the best basket of cut flowers. The committee no doubt are good judges of tasteful arrangements, but their decision was very disagreeable to certain Charles-street florists, who had brought out vast trays full of all the flowers they expected to sell in their stores to day. One of these gentlemen made a public exhibition of his bad taste and temper by attempting to ridicule, in the presence of the audience, the little Pomona d'Api, that had carried off the premium from his big pumpkin. As a much better way of settling this question, I now challenge Mr. J. E. Feast to a competitive exhibition at the May exhibition, to be open only to ourselves. The baskets of each to be of the same size and pattern, and to be accompanied by a certificate that the contents were grown by the person making the exhibit, and were arranged by him personally. The baskets to be delivered to the Secretary before the opening of the exhibition, and by him numbered and placed in the hall, and not to be approached by either of the parties until after the judges have passed upon their merits; the decision of the committee to be announced as the Society premiums are.

W. F. MASSEY.

April 20th, 1877.

[Ad.]

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BERKSHIRE PIGS FOR SALE.

My breeding stock are a sow and boar, bred by Mr. Russell Swanwick, England, and imported by Mr. T. S. Cooper, Lehigh Co., Pa., in 1876. The sow, Sallie Wanderer II., out of Othello's Sallie, and sired by Wanderer II. The boar Young Liverpool III., out of Sallie VIII., and sired by Young Liverpool, and he by Othello—g. dam Sallie VI. (L. L.) Also the Young boar Hesperian Major II., bred by B. St. John Ackers, Esq., Eng., who exported him, with others, last summer to Philadelphia to be exhibited at the Centennial exhibition of live stock; he and others of this exportation were bought by Messrs. Benson & Burpee, Philadelphia. They assured me that this Pig was the best one of the litter—dam Snowdrop—also Hesperian Major; and also two 2-year-old sows, and one 2-year-old boar. The sows bred by Mr. P. B. Longnecker, Pa., out of imported stock of good pedigree. The boar Black Prince, bred by the late Henry Carroll, Esq., Baltimore Co., Md., out of stock bred by Mr. Coffin, of Prince George's Co., Md., and stock bred by Mr. Danze, Baltimore Co., Md.—part of Mr. Danze's stock was also bred by Mr. Coffin. This boar is said to be of good stock. He is large, handsome and well marked, and his get of Pigs are very large, handsome and well marked. Mr. T. S. Cooper, in his Catalogue for 1876, says: "Othello's Sallie is one of the best Sallie sows living, and as a breeder has but a few equals. She stands amongst the first in my herd." That "Othello took first prize at Gloucester, the only time he has ever been shown." That "his pigs have, for years, won any number of prizes at the leading shows in England, and it is a pity that such a pig should die." He also says the g. dam of my boar Young Liverpool III., "Sallie VI. (L. L.) is well-known amongst the English breeders; has won more prizes and bred more prize animals than any other sow in the kingdom." Messrs. Benson and Burpee, in their Descriptive Catalogue, says: "Besides the Collier, we purchased two very fine boar pigs, and two sow pigs—all imported and out of Snowdrop—by Hesperian Major. These Pigs are perfect beauties, and promise to make show hogs of rare merit and very uniform excellence." Their sire, Hesperian Major, is one of the finest boars in England, and was bred by Heber Humphrey, Esq. They also mention seventeen premiums and reserve numbers that Snowdrop, her sister and brother won in England last year up to July, 1876.

The different families of the imported Berkshire stock I have, are noted as having been large prize-winners. I now have for sale a litter of pigs, a few days old, out of my imported sow, Sallie Wanderer II., by imported boar Young Liverpool III.; also a litter a few weeks old, out of one of the old sows, by Black Prince; and also four very fine young sows out of the old sows, by Black Prince. These I am breeding to my two imported boars. They are now ready for shipping. The young pigs will be shipped at three months old. I will ship none but prime pigs; all others will be turned into pork. Prices moderate for the quality of the stock. Orders solicited.

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
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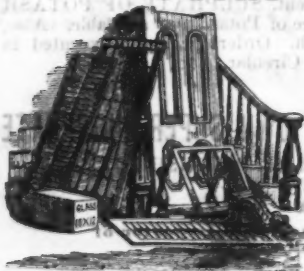
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